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Computing
WEEKLY

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21 – 27 February 1985

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Vol 4 No 8

Troubled Acorn faces winding-up order

ACORN S troublas intensified last waek with a winding-up ordez brought against the company by one of its creditors

Circuit board supplier Circuit Techniques petitioned for the order because of unpaid bills dating from November last year thought to amount to around £19 000. The ordez issued by the High Court last Thursday will be served on Acorn in Cambridge this week with a court hearing set for April 1

There has still bean no announcement by Acorn concerning its future, following the suspension of its shares trading on February 6.

It is believed that the company together with its new financial advisors Close Brothers, held a meeting with the company's major creditors on Friday February 15

However, the announcement of the long-awaited rescue plan to save the company has yet to be made

One possible plan is thought to involve splitting Acorn into four separate companies dealing, respectively, with research and development, and the home computer business and education markets





LET Show news-page 4

DDMARK has licensed the computer game rights for the next James Bond film, From a View to a Kill.

The programming is being done by Softstone, a company whose staff include ex-Ultimate programmers. When finished, the game will centre around arcade screens based closely on stunts used in the film in which

cont on p4 ▶

Profits let down for CBM as UK manager goes

COMMODORE has hit trouble with dismal financial results for the six month period to December 31 1984 and the resignation of its UK General Manager, Howard Stanworth.

UK General Manager, Howard Stanworth

Net sales for the six-month were down, compared with 1983, from $640 700 to $562 900 and profits came down to less than half from $74,400 to only $30,900 Commodore's chairman Irving Gould blamed the strength of the dollar and said, "Fiscal 1985, which ends June 30 is clearly a transitional period for Commodore "

In the UK, the post-Christmas staffing shake-out at Commodore UK continued last week with the departure of Howard Stanworth.

"He tendered his resignation during a meeting last week with Commodore's US president and chief executive, Marshall Smith," said a spokesman for the company "His parting is amicable on both sides."

So far, no replacement has been appointed Arthur Scott Commodore UK's company secretary, is at present acting General Manager.

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INSIDE) DK'TRONICS AMSTRAD SOUND REVIEW)


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Vol 4 No 8

Popular Computing Weekly

View

As we go to press there is still no announcement from Acorn – the UK's second biggest micro manufacturer – concerning its future, following the suspension of its shares two weeks ago. The only news has been bad – Circuit Techniques' winding-up order.

The longer Acorn remains in this state of limbo the less likely it is that the company will emerge largely intact.

One suggestion has been that Acorn should split into separate companies dealing with, respectively, the home, business and education markets. The fear is that Acorn's diversification out of the education sector – which accounts for over 60% of the company's turn-over – may have come too late. In the home market the Electron has not done well and a replacement for the BBC is needed. In the business market the ABC range is over-ambitious – even though Acorn's IBM-compatible offering is, from a technical stand point, a strong contendar.

Acorn must look for example to Atari. Twelve months ago Atari was where Acorn is now – only being bigger it had further to fall. It was loosing $800m a year and its main product, the 800XL, like the BBC, was past its prime.

Jack Tramiel, the new Atari boss, in just a few months wielded the axe, trimming Atari to a sixth of its size at 250 half the size of Acorn – and its new ST machine is generating a great deal of excitement.

Can Acorn effect a similar turn-round? Under the control of Curry and Hauser, I'm not so sure. Acorn is the company they built up together from nothing and they are too close to it to be objective – especially when the cuts may need to be savage.

Presents...

Futures...

Amstrad Star Game – Poker on the CPC 464 > Part Two of Adrian Warman's PBank for the CBM 64

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ABC

58 052 copies sold every week (Jan-June 1984 ABC)

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles and any accompanying programs should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year

Domark
continued from page 1

the player takes the part of James Bond/Roger Moore Domark also plans a music backing track for the game

Initially, versions will be available for the Spectrum, Commodore 64 and Amstrad CPC 464, with an MSX version soon afterward.

With an eye on the US market, Domark is planning later implementations for the IBM PC and Apple II.

The program is expected to cost around the £10 mark

Competition for Acorn

ACORN if it survives its present serious problems, will face tough competition in the education market from Apple

Apple has announced a UK schools discount scheme, called Our Kids Can't Wait, which offers a flat 50% discount on the Apple II model for schools and is accompanied by Summer 'teach-ins' for teachers

Although Apple holds only around 5% of the UK schools market – compared with Acorn's approximate 80% – the company's aggressive price cutting policies have been a significant factor in Acorn's failure in both the US and Eire schools markets

In the UK, with the government's half-price micro's in schools scheme at an end, Acorn has had to put together its own discount packages for education.

The emphasis has been placed on schools up-grading from the basic system, rather than buying for the first time "Introductory offers for schools buying their first micro will give a 20-25% discount, there are various bulk packages of peripherals for schools wishing to up-grade from the basic system, and then complete packages, which vary according to the intended age range, which will carry a 30-40% discount," said an Acorn spokesman

"For example a BBC B plus Econet plus a DFS with a second processor and 800K disc drive would sell for under £1 100 as opposed to the normal cost of around £1,800 "

LET Show Report

OVER 200 companies exhibited at the LET micro trade show, held at Olympia in London from February 17-19

The emphasis at the show was very much on new software products with many companies previewing programs not due out until Easter time.

Addictive Games showed a prototype version of its next game, *Stringer* for the Commodore 64. *Stringer* is an arcade game set in a hotel – the player must search the hotel rooms for items such as a camera and keys, while evading members of the hotel staff

Gargoyle Games announced its conversion of *Tir Na Nog* for the C64 at £9 95, and also showed screens from its next game, *Dun Darach. Dun Darach* (Gaelic for Hill of the oak) features Cuchulainn's early days – Gargoyle's Greg Follis describes it as a *Tir Na Nog* 'prequel' The game also features around 30 other animated characters with whom Cuchulainn must interact Playing techniques are otherwise similar to *Tir Na Nog* *Dun Darach* is set for a May release at £9.95 for the Spectrum and Amstrad CPC464 Gargoyle is also planning to release a program based on Lewis Carroll's *The Hunting of the Snark* in October 1985

Still on the subject of follow-ups, Palace Software displayed its second program *Cauldron* an arcade adventure for the C64 and Spectrum at £7 66, which should be available in April or May

Mikro-Gen's Wally Week character continues in similar vein in *Everyone's a Wally*, which also features people such as Wally's wife, Wilma, and son Herbert

Llamasoft previewed *Mama Llama*, Jeff Minter's latest hairy animal shoot-em-up

Firebird showed the second of its 'Gold edition' games, *Buggy Blast* Gremlin Graphics announced *Safebreaker*, and Argus had *Give My Regards to Broad Street*, based on the film of the same name and part of Argus's Mind Games series up and running Bug-Byte was showing the long-awaited *Automan* game, licensed from the TV programme

Activision, hoping to consolidate the runaway success of *Ghostbusters*, launched no fewer than nine new titles, many of which were shown for the first time at CES last month.

QL upgrades from Psion

SOFTWARE up-grades of the four Psion software packages bundled with the QL are expected to be available by the end of this week

QLUB members will recieve a free up-grade

The four packages are considerably enhanced versions of *Quill, Archive, Easel* and *Abacus*, being written now in machine-code rather than in C They are faster and being more compact they load in half the time and use up less memory With *Quill*, for example, there is room after the package has loaded, for a 4½ page document to be held in Ram, rather than having to access the microdrives

Oric offers roll in

SEVERAL offers have already been made to the Oric receiver to buy the assets of the failed micro manufacturer.

Among those under discussion are those from a syndicate set up by ASN, exclusive distributors of the Oric machines in France, and a proposed purchase of assets by Barry Muncaster a director and joint owner of software house Tansoft.

Muncaster resigned from his positions as managing director of both Oric and Edenspring just days before the receiver was called in at Oric (see *Popular Computing Weekly* February 7)

Barry Muncaster will know this week whether his offer has been accepted.

Muncaster has now taken over as head at Tansoft, and Bruce Everiss contract as managing director of Tansoft and marketing consultant for Oric was terminated last week.

"Bruce's role as a marketing consultant for Oric was at an end, and his job complete," said Barry Muncaster

Commented Everiss "I could see it coming When Oric went down, Barry Muncaster came in to run Tansoft, and his style of doing things was very different from mine "

Alien 8 – Ultimate's newest

ALIEN 8 is the latest release from Ultimate Play the Game The graphics and playing techniques are very similar to those of Knight Lore In Alien 8, the player controls a robot on a spaceship, who must find a number of keys and use them to activate stores of cryonaughts held in suspended animation at locations aboard the craft.

Alien 8, for the Spectrum, costs £9.95. For a more detailed review, see page 47.

New robot from IGR

ZERO 2 is a new low-cost robot which can be interfaced to most home micros

Developed by Intergalactic Robots (IGR) – a new company formed by computer journalist Robin Bradbeer – it is intended for both home and educational use with any micro offering an RS232 port

Zero can be programmed from either Basic or, with schools in mind, from Logo any RS232 port The basic robot, which comes in kit or fully-assembled form, has a two tone horn a line follower, and a pen which may be raised or lowered. Additional boards for the machine will add speech, 3-channel sound and obstacle detection.

The kit version of Zero 2 is £79.95 – ready-built it costs £99.95 Software to drive the robot from the Spectrum (with Interface 1) and BBC micros is available now A Commodore 64 version of the software will follow

IGR has arranged with Sinclair to have a bundled package of Zero 2 and Sinclair Logo available for £129.95 A similar arrangement has been made for Logotron Logo on the BBC (£149.95, available April)

C128 delay denied

SUGGESTIONS that the UK launch of Commodore's new C128 machine will be delayed until the late Summer have been firmly denied by the company

Gail Wellington, Commodore's European Software Development Manager commented. "It's still all on target for the late spring." "The C128 is going through the pilot production stage now, the machine shown at CES being a hand-built engineering model.

"The price for the C128 in the UK will depend on the strength of the dollar over the next few months, and we will not finalise the price until we are ready to go into full production."

Quest for the Fab Four

AN ADVENTURE game based on lyrics from Beatles songs is due out soon from a company called Number 9 Software

"The game is closely linked throughout with the songs," said Gary Marsh, who wrote the adventure called *Beatles Quest*.

"For instance, you can visit locations such as Strawberry Fields, Penny Lane and Eleanor Rigby's grave

"The idea behind the plot is that you are a student of mythology studying the Four Kings of EMI, and you must collect twelve objects of interest and value to help you with your project

Beatles Quest has been written using the *Quill*, and will initially be sold by mail-order for the Commodore 64 and later the Spectrum and Amstrad, at around £10. Details from Gary Marsh, 47 St George's Avenue West, Wolstanton, Newcastle-under-Lyme

New software for VTX5000

OWNERS of the VTX5000 modem for the Spectrum who wish to access 300 baud non-Prestel format ascii-type bulletin boards can now do so

Specnet, available on cassette for £5.95, allows VTX5000 owners to communicate control characters to ascii boards and also save and load information from the boards to tape or microdrive

Details from Stephen Adams, 1 Leswin Road, London N16 01-884 1869

Letters

Chicken and egg

In a recent editorial you stated that the 68000 was taking over from the Z80 and 6502 processors, and that British software houses were having difficulty in making the transition.

We feel we should point out that the lack of a wide range of software for the Sinclair QL is due almost entirely to the nature and small size of the User Base. For a proficient machine code programmer, learning to use a new Microprocessor takes at most two days. This should not be confused with learning about a new computer to its best advantage, which might take a couple of weeks.

As soon as a computer has achieved or looks like achieving sufficient sales to warrant production of programs then those programs will start to appear in quantity.

Andy Lawrie
Technical Director
Micro-Gen
23a Station Road
Ashford, Middx

If you assume that software sells micros then what you propose is a circular chicken-and-egg argument — as sales equals no software equals no sales. How then is any new micro to survive?

I still think that the software companies which look set to stick around are the ones which take a more long term view.

Two days to learn a new processor? Micro-Gen works fast.

A new version

Owners of the Sinclair QL who found my article *Dark Secrets of the QL Rom Revealed* useful may be interested in learning of the release of a new version of the QL Rom — 'JS' — which includes QDOS version 1.10.

In my program, included in Vol 3 No 25, simply alter Line 180 to read *TABULATE* 28184 and change Line 230 to *TABULATE* 28666 to reveal the runtime module addresses for all the keywords in your new Rom. There are 25 new keywords and, of course, all the other keywords have changed addresses.

COMMAND ROUTINE ADDRESSES

PRINT	30276	RUN	32164	STOP	32766	INPUT	30374
WINDOW	33638	BORDER	33676	INK	30194	STRIP	30198
PAPER	30262	BLOCK	32632	PAN	30196	SCROLL	30200
CSIZE	26274	FLASH	27564	UNDER	27550	OVER	27586
CURSOR	26318	AT	26724	SCALE	27638	POINT	27668
LINE	27674	ELLIPSE	27898	CIRCLE	27898	ARC	27778
POINT_R	27660	TURN	32408	TURNTO	32400	PENUP	32466
PENDOWN	32470	MOVE	32484	LIST	29024	OPEN	27460
CLOSE	27430	FORMAT	27252	COPY	27270	COPY_N	27282
DELETE	27310	DIR	27118	EXEC	26744	EXEC_W	26760
LBYTES	26886	SEXEC	26940	SBYTES	26948	SAVE	27900
MERGE	32202	MRUN	32212	LOAD	32244	LRUN	32290
NEW	32262	CLEAR	32052	OPEN_IN	27468	OPEN_NEW	27472
CLS	30192	CALL	28808	RECOL	31436	RANDOMISE	31188
PAUSE	30288	POKE	30316	POKE_W	30324	POKE_L	30330
BAUD	25820	BEEP	25806	CONTINUE	32336	RETRY	32326
READ	26710	NET	30126	MODE	30096	RENUM	31528
DLINE	29794	SDATE	28824	ADATE	28584	LINE_R	27678
ELLIPSE_R	27792	CIRCLE_R	27702	ARC_R	27782	AUTO	31402
EDIT	31470	FILL	27530	WIDTH	32636	PAPGAT	32126
TRA	32344						

FUNCTION ROUTINE ADDRESSES

ACOS	32852	ACOT	32858	ASIN	32864	ATAN	32870
COT	32876	COS	32882	EXP	32888	LN	32894
LOG10	32900	SIN	32906	SQRT	32912	TAN	32918
DEG	32924	RAD	32930	RND	33002	INT	33100
ABS	32962	PI	33090	PEEK	33132	PEEK_W	33140
PEEK_L	33158	RESPR	33106	EOF	33220	INKEY$	33214
CHR$	33387	CODE	33502	KEYROW	33646	BEEPING	33708
LEN	32008	DIMN	33542	DATE$	33722	DATE	33622
DAY$	33716	FILL$	33607	VER$	33266	ERR_NC	33000
ERR_NJ	32804	ERR_OM	33814	ERR_OR	33802	ERR_BO	33800
ERR_NO	33798	ERR_NF	33796	ERR_EX	33794	ERR_IU	33792
ERR_EF	33790	ERR_DF	33788	ERR_BN	33786	ERR_TE	33784
ERR_FF	33782	ERR_BP	33780	ERR_FE	33778	ERR_XP	33776
ERR_OV	33774	ERR_NI	33772	ERR_RO	33770	ERR_BL	33768
ERROR	33882	ERLIN	33896				

The accompanying figure is an example print-out from the suitably modified program.

I hope this proves of use and interest to new 'JS' owners, like myself, and envious QL users still stuck with 'JM' and even 'AH' versions as I was until my machine was given a retrospective upgrade whilst being repaired.

Alan Turnbull
Vicarage Road
Cale Green
Stockport

Think again

Although I realise it must be very annoying for top programmers to see their latest program pirated, isn't it time that the so-called 'turbo-load' was stopped?

It's all very well stopping people from copying by putting on an anti piracy device, but when it gets to the point when even the originals don't load surely it is time to think again.

A Woods
Andover

Old and obsolete

People should think twice before throwing out their old calculators and microcomputers.

Today's radios, calculators and especially computers will, I'm sure become tomorrow's collector's items — worth perhaps huge sums of money. In the future, people will then be able to look back and marvel at the antiquity of our present day technology.

I have now started to build up my own collection of old and obsolete microcomputers which can be picked up now for practically nothing, often in pristine condition.

Robert Sedgwick
Waltham
Grimsby

More C16 reviews

I think your comments regarding the lack of C16 software (February 7 issue) are quite unjustified.

My husband and I are building up a collection of C16 games and have 12 titles already, with another ten we want to buy.

Please stop saying there is a shortage of software and lets have a few more C16 program reviews.

Yvonne Thorpe
Essex



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New packages will be introduced to the Gold Medallion range every so often, but only if they are really exceptional They'll definitely be hard soft to beat

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Whether you're an accomplished musician or an out-and-out beginner Music Maker strikes exactly the right note

No matter if you've never played a note before, so long as you can hum and you know your ABC, you can start to play famous popular tunes immediately

And it won't be long before you appreciate Music Maker's many advanced capabilities you can synthesise many musical instruments, even create your own synth' electronic sounds, choose between monophonic or polyphonic play, summon up pre-programmed rhythms and bass accompaniments, and more

Music Maker is the first in a series of packages which will fully exploit the Commodore 64's outstanding musical capabilities

On disk or cassette, with music keyboard, a clear and concise manual, and song book, for just £29 95

SPIRIT OF THE STONES

It's a treasure hunt for 41 real diamonds hidden somewhere on the Isle of Wight

Only one man knows where they are, and he's not saying

All that he has to say he's said already – but in the form of riddles clues and puzzles

Solve the puzzles in the Spirit of the Stones program and you'll find it much easier to solve the puzzles in the Spirit of the Stones book

Solve the puzzles in the book and one (or more) of the diamonds can be yours

Whoever discovers a diamond can also claim his or her share of the Royalty Fund, which could grow to a maximum of £1 million It's a game that's as entertaining as it can be rewarding

On cassette or disk, £14 99

INTERNATIONAL FOOTBALL

Already it's recognised as the best football game ever seen outside of Wembley

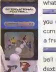
It's startlingly life-like, and gives you near perfect control of the players

You can kick the ball, dribble it, pass it,

MEDALLION. HAVEN'T GOT IT AVEN'T GOT IT.

head it or even throw it in from the touch-line. And every time you belt the ball into the net, the crowd cheer wildly.

How often you score depends on how good you are, and also at what level you choose to play.



There are 9 levels you can play against the computer. Or you can play a friend.

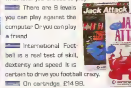
International Football is a real test of skill, dexterity and speed. It is certain to drive you football crazy.

On cartridge. £14.99.

JACK ATTACK

There's no other game like it. It has been voted by the U.S. magazine 'Electronic Games Hotline' as a 'must buy'.

Jack Attack is about squashing heads. It's an addictive game, a game of strategy and cunning. We can almost guarantee it will turn you into a head-case.



To stay alive, Jack must leap aside from collapsing bridges and crashing blocks, and at the same time he must make sure he doesn't fall into the water and drown.

And that's the easy bit.

Because everywhere Jack goes he's dogged by jolly bouncing sadistic heads that are out to nut him.

He has to squash their heads before his is squashed.

And Jack can't afford to lose his head because we've only given him three, and when they've gone, he's gone.

Jack Attack is available for both the Commodore 16 and Plus/4. On cartridge £14.99.

commodore

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Integrated System

The Wafadrive is a complete system which contains the micro interface, two 128K drives, RS232 and Centronics ports, all in one attractively-styled, compact unit. There is a minimum of connecting leads and no extra boxes to clutter the desk top. Like the majority of professional systems, the units are dual drive. This offers the optimum balance between system flexibility and cost. Built-in serial and parallel interfaces allow the direct connection of just about any popular printer.

Fast and Reliable

The Wafadrive achieves very fast loading and saving, but not at the expense of reliability. Extensive research and the use of high grade materials ensure that the Wafadrive will give years of dependable operation. Data integrity is on a par with floppy disk. Three fully interchangeable blank wafers in three sizes – 128K, 64K and 16K – are also included. Low capacity wafers give faster access. They are therefore most suitable for program development applications. The high capacity wafers are suitable for more general data storage. Loading rate is well over ten times as fast as cassette!

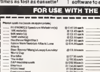
Software

Armed with the comprehensive user manuals, blank wafers and superb Spectral Writer word processor, you'll have a professional system to be proud of. See the coupon below for details of the rapidly growing range of software to enable the programmer and games player to exploit the Wafadrive system to the full.

Buy Now!

Cheap, reliable mass data storage for the Spectrum has finally arrived – make sure you benefit from SMT's special offer. Clip the coupon below and your order will receive immediate attention.

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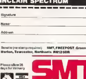


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Reviews

Reasoning

Program *Lock Keeper* **Price** £4 95 **Micro** Spectrum 48K **Supplier** Deva Educational Software, 33 Upton Drive, Chester CH2 1BY

Does this educational program indicate that Deva expects a great revival in canal travel? Not really, but it uses the processes involved in operating a lock to encourage reasoning and ordering skills. For example, if you open both gates the water flows straight through and you drain the canal

While the theory behind this program seems sound enough, the implementation is unlikely to hold the attention of the average ten year old. The title screen gives the option of the tutor program or the tests. The former runs through the procedures of lock keeping in a friendly fashion, with animate illustrations Once the child understands this, the tests present six different situations and a menu to conduct them

A percentage score follows each test and the inputs are well idiot-proofed, but in the end it is worthy rather than exciting Perhaps if the tests could be replaced by a simulated journey with a race against time it would be more appealing, but sadly the educational software market is seldom able to develop sophisticated offerings owing to its scale. A small company has put some hard work into this program but the end result lacks flair

John Minson

Pot luck

Program *Steve Davis Snooker* **Micro** CPC 464 **Price** £7 95 **Supplier** CDS Micro Systems, Silver House, Silver Street, Doncaster, South Yorkshire DN1 1HL

After all the fuss I made about how Amsoft's *Snooker* will compare to this version I am now in a position to say and the first point to make is that where Amsoft's game was too slow and difficult this one is very very fast. I'm sure it's also easier (because the pockets are bigger) I found it much more enjoyable to play, and the pace certainly suits my temperament

Unfortunately, there are one or two drawbacks to the CDS game that cloud the issue Firstly, and less importantly, the CDS game has far less attention to detail with nowhere near as attractive on-screen scoring for instance More crucial, though, is the fact that CDS appear to have given no consideration at all to the owners of the green screen monitor – not only did the Amsoft program allow the colours to be numbered on screen, but as you moved the cursor over a ball there was a message telling you which colour it was CDS seem content to let you take pot luck (get it?) forcing you to nominate a colour before you line up the cursor

In practice, the various colours are very difficult to distinguish in monochrome and many foul shots result This may drive a significant proportion of potential buyers to the Amsoft game

Tony Kendle

Deflated

Program *Guzzler* **Micro** Commodore 64 **Price** £7 95 **Supplier** Interceptor Micros, Lindon House, The Green, Tadley, Hants

This is another of those ridiculous maze games, with funny characters and hundreds of different screens Don't get me wrong, some people will love *Guzzler*

Your are a mouse and, as mice are always hungry, it is your job to find food. The food is placed in various locked rooms around the maze, and you have to get a key to gain access, before you get to eat it. You must also avoid the meandering Frobbies, who are far more keen on eating you. After eating the food in one section, the mouse becomes fat and has to be guided to the edge of the maze to be deflated by Deflator Dennis

Sometimes, when the going gets tough, you even need to use time bombs (ever seen a mouse carrying a time bomb? No, neither have I). If things are going well, Bonus Barry appears and can be caught for extra points

Although *Guzzler* is quite fun to play, I feel that it lacks that original spark. If you haven't already got a maze game in your collection, then I suppose you could do worse than shell out for this one

Tom Hussey

Martial art

Program *Kung Fu* **Price** £6 95 **Micro** Spectrum 48K **Supplier** Bug Byte Software, 99-100 The Albany, Old Hall St, Liverpool, L3 9EP

I loaded this program with trepidation, not that it would lock the keys from my Spectrum, but that it would be the silliest sport simulation yet After all, what is Kung Fu without physical exertion, bones crunching and cries of 'Argh'?

Sixty minutes later I was hooked Backed by an incessant oriental tune my fighter, a full third of the screen tall and superbly animated, moved back and forth, trying to topple his computer operated opponent With just two hand blows and two kicks he blocked, hesitated found an opportunity and struck The opponent toppled and I gained my yellow belt.

To confirm my impression that the moves are accurately reproduced I left the arcade game and invited a karate green belt friend round to fight me on the two player option. She recognised the blows immediately and proceeded to deliver a nifty kick to the head of my man Beginner's luck, or had her martial arts expertise actually helped?

Possibly only four moves will limit the program's life, but then again the one and two player options are quite different games, and the timing and precision needed are every bit as exacting as in arcade adventures Forget the doubts, all I have to say is . . . . Hai-ee-ahh!

John Minson

Powerful

Program *Arnor Z80 Assembler, Disassembler and Editor* **Price** £13.50 **Micro** CPC 464 **Supplier** Arnor Ltd, P.O. Box 619, London SE25 6JL

Any program that called itself an assembler should be able to perform the same basic function – converting assembler to machine code. However the things that separate one version from another are the supporting utilities, the flexibility, and the ease of use, and this attempt by Arnor is easily the best that I have seen in those respects. It features a menu driven by disassembler and a memory lister in addition to the main editor and assembler, but the latter two are certainly the most important features. Each part can be loaded or omitted independantly so that full use is made of the memory.

The assembler itself has many excellent features – allowing identifiers of any length and almost any form including the use of directives and mnemonics as lables, and allowing conditional assembly via nested *If*, *Else* and *Endif* so that the object code differs in response to variables such as available memory. The assembler is two pass and different messages can be caused to appear on each pass and you are also given extensive control over the screen and printed output with various commands.

However, it really comes into its own by allowing mixing of assembler and Basic – the utility can reside in memory above your program and assembler language can be entered as lines of Basic assembled using commands provided as system extensions and run from any point in the program without affecting basic variable storage. Provision is made for full parameter passing between the two languages.

The editor allows full screen editing with excellent cursor control, delete and insert functions and block loading, saving and printing. Although it has been designed to be used with the assembler, it can be used as a powerful editor for text and basic files saved to ASCII format – a truly superb feature that illustrates the care that has gone into this program. The documentation is good enough for most people's use and the company promise more utilities of a similar quality if this one does well – let's hope it does.

Tony Kendle

Repellent

Program *Upper Gumtree* **Price** £6.95 **Micro** Commodore 64 **Supplier** Richard Shepherd Software, Eton House, 23-25 Elmshott Lande, Slough

First we had the grisly hysterical world of *Urban Upstart* and now, once again courtesy of Richard Shepherd software, come the horrors of *Upper Gumtree*, the town where beans on toast used to be a big event. But that, of course, was before the Mad Professor arrived. Now nobody can call Upper Gumtree boring. Weird, potentially lethal and frequently repellent, yes. Boring, no.

The Prof is, naturally, after World domination and for some reason (well, he *is* mad) has picked UG as his base. Now sinister shapes petrol the night skies, the noses of the citizenry glow in the dark and Tuesdays have vanished completely. The Prof has a plot, but what can it be?

In quest of the answer I found myself in a peaceful country lane with what I foolishly assumed to be two trusty companions, Emma and Wally. Emma's OK, but after being left to bleed to death in the first minute by an abusive Wally, I began to wonder about keeping company with a kleptomaniac.

Each route, once I had solved the initial problem, led to further danger including a murderous farmer, a fast-moving and extraordinarily persistent bull, rabid dogs and the very nasty effects of attempting to take refreshment in UG. Most locations start with a rapid illustration which then gives way to text and, in a nice touch, you can alter the text colours to your preference. And descriptions are often amusing, not least the "obligatory wood".

I found this more fun than *Upstart* and also more of a challenge. I still haven't figured out the plot, but now I've managd to distract the guard dogs. The Prof's meglomanic days may be numbered.

Barbara Conway

Deadly toys

Program *Toy Bizarre* **Micro** Spectrum 48K **Price** £7.99 **Supplier** Activision UK, 15 Harley House, Marylebone Road, London NW1.

With its bright red cover *Toy Bizarre* looks like a belated Christmas gift and with its standard size cassette box it looks unlike previous lavishly produced Activision products.

The game itself unfortunately, considering its £7.99 price tag, wouldn't look out of place in a budget range.

Not that *Toy Bizarre* is bad – it just seems to come from One Million Years B.W. (Before Willis). It's a platform game set in a toy factory after midnight, with Merton as the latest in a long line of overworked individuals with silly names (sorry, all Mertons out there). He runs and jumps in an effort to stop balloons filling themselves at taps, metamorphosing into deadly toys, then returning to their original state of balloonatic bliss (an unusual life-cycle here, unknown even to O-level biologists!) There's also Hefty Hilda, the roving menace, and Piston Platforms which propel anything on them upwards. Inevitably, each successive screen is more difficult than the last.

This can be enjoyable for a while as the screen fills and you race against time, but the program lacks finesse. The screen is soon full, luck plays too great a part and the graphics are nothing special.

All in all, a stocking filler at a big present price.

John Minson

Spoken word

Hardware Amstrad Speech Synthesiser plus stereo **Micro** CPC 464 **Price** £39.95 **Supplier** DK'Tronics Ltd, Unit 6, Shire Hill Industrial Estate, Saffron Walden, Essex.

I must confess that I've never been one to be greatly seduced by the appeal of computer speech, nor, having been used to the Spectrum's weedy bleeps, did I regard the CPC 464 as a machine that requires external amplification as a high priority. However, there can be no question that speech synthesisers, if they can sell in sufficient numbers to encourage software support, are popular peripherals and it is certainly nice to be able to hear the stereo effect of the sound channels without the rigmarole of plugging in the hi-fi, which always struck me as a retrograde step from the remarkable simplicity of the all-in-one single plug 464.

The package consists of two quite neat 'pod mounted' car speakers which connect to a small box, finished to match exactly with the main computer except for the DK'Tronics logo. This plugs snugly into the floppy disc edge connector and also sends a wire to the stereo sound output socket, together with a built-in extension bus to allow further external peripherals to be plugged in. Fitting should be simple, involving just slotting the thing into the back.

However, the first try revealed an unexpected fault in my computer – if you inspect the floppy disc edge connector you will see that it in fact consists of two halves separated by a slot, presumably to ensure that you don't plug things in upside down. On my machine this slot is self-evidently smaller than it should be and I could not get the speech box to fit without damaging the corresponding ridge on the interface. Having struggled for almost half an hour to sort this out I am now dreading having to remove the interface.

In place it acts as a permanent amplifier and stereo output for commercial games etc. It gains all its power from the computer and does not interfere with the inbuilt sound output if you choose to disconnect the speakers.

The speech part of the interface can be accessed from Basic or machine code at any time by sending the appropriate allophone data to the out channel concerned. To help you do this there is a table of words showing their composition in allophones. You can also control the speed at which the speech is output. Sound quality is appropriately robotic and bland but reasonably clear. However, once the accompanying, relocatable, 5K of software is loaded then the thing comes into its own. You are given eight new Basic commands for controlling the speech output and, as well as allophones, you can now employ 'text to speech conversion' wherein you can direct a message that would normally be printed to any channel to be spoken.

Within minutes the big kids in our house had the 464 saying all sorts of outrageous things to the accompaniment of much hilarity and I can confirm that this system seemed to work even better than the allophone method. I trust that there will be no problems from DK'Tronics about software copyright if people choose to include this in their own Basic programs. The speech commands are interrupt driven and there is a built-in buffer that holds some 45 seconds of speech.

In all this is a fun package that whilst appearing a bit frivolous in some ways, has been well implemented and has enough good features to make it worth the money.

Tony Kendle

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Epic proportions

***Graham Taylor** goes in search of interactive video and finds it in unexpected places.*

Interactive video, it seems, is almost here, but then it has been almost here for several years now. It was almost here when the first Laserdisc arrived. It was even more almost here when *Dragon's Lair* didn't much wow them in the arcade.

Actually the truth is that interactive video has been around for ages, three or four years, in fact, and has reached a surprising degree of sophistication. Video images and narrative sequences can be freely mixed with computer graphics, scrolled, dissolved, mixed, matched and retrieved from Laserdisc in seconds. The equipment involved is largely standardised and relatively simple.

Epic is probably the biggest interactive video company in the country, one of the biggest in the world, but you won't find its product in the arcades or on sale in your local computer store. The chances are that you won't see its work at all, because interactive video has stopped being almost here and is instead wowing them in the wonderful world of industrial communications, more specifically, training material and point of sale information.

Head of the interactive video department at Epic is Mike Huddart and I talked to him about his work. "It began when Eric Parslow, the founder of the company, saw the system at work in America. Epic was already involved in ordinary training videos and he saw how the system could be used to improve that process immeasurably."

Over the years Epic has produced a system for IBM to help them inform their dealers about ranges, a system for Rolls Royce to help its trainees and workers learn how to assemble and inspect aero engines, EETPU, the engineering union has a system which introduces traditionally trained workers to the mysteries of solid state physics, and the Manpower Services Commission is installing a system of interactive video into 42 special information points within selected Job Centres.

Mike described the ideas behind this last project. "It is intended to help people visiting the Job Centre find out more about the services at a basic level – so that they know what kind of things the staff can help them with." There are also technical reasons why the Job Centre project is interesting: "The Manpower Services Commission is using it as a test for the two main rival systems – the Phillips Laservision and the Thorn UHD (ultra high density)."

Nearly all of Epic's work is based on one of these two systems at the disc end. I asked Mike about the systems. "The laserdisc can contain up to 37 minutes of continuous film sequence or 54 000 individual still frames. The Thorn system can have over an hour's worth of film or 30,000 frames."

Wasn't 37 minutes a very short time limit? "Actually no, we can make use of that 37 minutes of film sequence, so that the EETPU course, for example, lasts four days. It's a matter of careful design – after all, in an instruction video there are going to be sections where you simply require someone to read a screenful of text, which means one still image can use up a minute or so of time."

The computer end of the system is, within limits, not too important. Epic has utilised the IBM PC and the BBC amongst others. "We use a BBC on the EEPTU project and it's perfectly adequate – the advantage of the BBC is that its signal is highly suitable for TV."

As you might imagine the process of making an interactive video is fairly complex and time consuming. "In a typical piece there might be 40-50 major branch points and many more lesser ones where different sequences of computer graphics, text, video images may be required. Each piece has to be originated: programming has to be worked out, computer graphics prepared, still shots have to be professionally taken and filmed sequences recorded.

"You need a multidisciplined team – in the case of a training video you need an expert on the subject. You must work out, in consultation with the client, the aims and objectives of the work and how to best put it over. You need audio-visual specialists who can create strong images and who know how to use effects like dissolves, and you need systems analysts who work to a more disciplined way in using computer systems correctly. At the very least it's a computer team plus a video team. Finally you need a project leader who can pull together the two disciplines."

Actually, looking at Epic's work it becomes apparent just how sophisticated the system has already become.

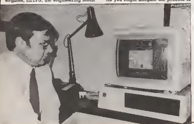
A piece is being developed for IBM which uses a touch screen television – different sections of the TV screen producing different results: one part accesses help information, another lets you look at traditional information on each subject, and so on.

The idea is that the end result will be available for IBM dealers for use in the showrooms. "There are quite a few places where videos are shown to interest customers in products and services, but who looks at them? With this system people can choose the sections they are most interested in."

The end result is an impressive mixture of scrolling film screens with computer graphics. Whatever you think of IBM, you find yourself playing with the system and wanting to see more. "Sometimes we have to explain to our clients that the system is capable of far more than simply chopping up bits of tape and accessing them quickly.

"For example, the IBM program does more. Even that shows a sophisticated advert where you decide what products you want to know more about. Every time a section is kept by the computer and filed appropriately it means that the dealer can know exactly what products his customers are most interested in."

Technology for video interaction is largely with us, but Mike sees the main problems as those of human skill. "I would say that, certainly for Epic's purposes, the technology is more or less with us for most things we want to do. It's more a matter of acquiring the skills and techniques to use it properly and effectively. There can be a tendency to make the whole thing more sophisticated and complex than it needs to be. We have to remember what the end result is supposed to be."



Star Game

Snooker Strategy

Straighten that bow-tie as you type in this Snooker Strategy program for the CBM64 by Steve McCarthy

Ever thought of yourself as a budding Steve Davis? Or maybe cutting a more debonair stride as a Cliff Thorburnite? The trouble is that you don't know which end of a cue to grab hold of and it's difficult to fit a billiard table into the box room. However, these problems are solved with Snooker Strategy, a two-player game for the Commodore 64.

Sitting back in your chair, you select the ball to be potted – none of this straining over the green baize business – as you build up your break, or play a sneaky one to snooker your opponent. What's more, you don't have to wear a dinner suit.

Type it in, and remember we all had to start somewhere. Now where did I put that chalk.

```
10 POKE53280,5:POKE53281,5:HK=8:DIMF%(1
F=INT(RND(1)):GOSUB14000
15 DIMA$(  ),  I  S%(  ),  D%(  ),  E%(  )
16 REM CLR SCREEN RVS ON GRAY 1 RVS OFF
20 PRINT"  WHTHE COMMODORE 64 SNOOKER  TOURNAMENT"
30 GOSUB300
34 REM HOME 4#CRSR DOWN ORANGE
35 PRINT"
39 REM RVS ON WHITE RVS OFF CYAN GRAY 1 RVS ON WHITE RVS OFF
40 PRINT PLAYER 1 FRAMES          FRAMES PLAYER 2
44 REM BLUE YELLOW 1#CRSR BLUE-RED
47 PRINT" SCORE   BREAK
 BREAK   SCORE   PRINTTAB(11)"HIGHEST BREA
K"
48 REM ORANGE
50 GOSUB1500:PRINT"
60 GOSUB1510:GOSUB1520:GOSUB1530
99 REM HOME 5#CRSR DOWN BLACK RVS ON WHITE RVS OFF
100 IFF=THENPRINT"PLAYER 1"TAB(22)"PLAYER 2":GOTO140
109 REM HOME 5#CRSR DOWN RVS ON WHITE RVS OFF BLACK
110 PRINT"PLAYER 1"TAB(22)"PLAYER 2"
119 REM HOME 3#CRSR DOWN GRAY 3,
120 PRINT"PRESS A KEY (1-9) TO SELECT OBJECT BALL."
129 REM HOME 1#CRSR DOWN BLACK
130 PRINT"1=RED, 2-7=COLOUR  8=PLAY A SNOOKER
 9=PLAY   F SNOOKER"
150 GETK$:IFK$<"1"ORK$>"9"THEN150
159 REM HOME 9#CRSR DOWN
160 PRINT"      FORN=1TO4:PRINTC$;:NEXT
164 REM HOME 1#CRSR DOWN  HOME 22#CRSR DOWN
164 PRINT"
165 PRINT"
167 IF SN%=1-MID-K$    " THEN9000
168 IF ABS(S   -S   )    >7)AND(BN%=21)AND(K$="8")THEN3100
169 IFK$="9"AND...=0THEN8200
175 ONVAL(K$)GOTO100,300,400,500,500,700,800,900,950
180 IFBN%>15THENGOSUB2000:GOTO100
200 IF LPOT%(1)THEN3010
210 PV%=1:GOTO2110
300 IFBN%>16THEN3100
305 FV%=4:IF(BN%<>16)AND(LPOT%<>1)THEN2010
310 PV%=2:GOTO2110
400 IFBN%<>17THEN3100
405 FV%=4:IF(BN%<>17)AND(LPOT%<>1)AND(LPOT%<>2)THENGOTO2010
410 PV%=3:GOTO2110
500 IFBN%>18THEN3100
505 FV%=4:IF(BN%<>18)AND(LPOT%<>1)AND(LPOT%<>3)THENGOTO2010
510 PV%=4:GOTO2110
600 IFBN%>19THEN3100
605 FV%=5:IF(BN%<>19)AND(LPOT%<>1)AND(LPOT%<>4)THENGOTO2010
610 PV%=5:GOTO2110
700 IFBN%<>20THEN3100
705 FV%=6:IF(BN%<>20)AND(LPOT%<>1)AND(LPOT%<>5)THENGOTO2010
710 PV%=6:GOTO2110
800 IFBN%>21THEN3100
805 FV%=7:IF(BN%<>21)AND(LPOT%<>1)AND(LPOT%<>6)THENGOTO2010
810 PV%=7:GOTO2110
900 FV%=VAL(MID$(P$,BN%,1)):IFFV%<4THENFV%=4
910 GOTO2110
950 FV%=VAL(MID$(P$,BN%,1)):FV%=PV%:IFFV%<4THENFV%=4
960 GOTO2110
1000 RESTORE:FORN=0TO6:READA$(N):NEXT
1005 FORN=0TO8:READB$(N):NEXT
1010 DATARED,YELLOW,GREEN,BROWN,BLUE,PINK,BLACK
1011 DATAPPFFMP,FFPFMS,PPMFPS,PPPFMS,FPMMFS,PFMFMS,PPMMFS
MMFSMF,MPFFPR
1020 B$="                    ":P$="111111111111111234567"
:POT%=0:LPOT%=0
1025 C$="                                      "
1029 REM HOME 2#CRSR DOWN,RED,YELLOW,PURPLE,BROWN
1030 PRINT"TAB(10)LEFT$(B$,15)""MID$(B$,16,1)
""MID$(B$,17,1)""MID$(B$,18,1)
1039 REM BLUE LT. RED BLACK
1040 PRINT""MID$(B$,19,1)""MID$(B$,20,1)""MID$(B$,21,1)
1049 REM WHITE
```



```
1450 PRINTTAB(19)"[illegible]
B%(1)=0 RETURN
1499 REM HOME 7#CRSR DOWN YELLOW GREY 1
1500 PRINT [...] "S%(0)TAB(33)"[...]B%(1) RETURN
1509 REM HOME "#CRSR DOWN,CYAN GREY 1
1510 PRINT [...] SPC(15)F%(0)TAB(60)"[...]F%(1) RETURN
1519 REM HOME 6#CRSR DOWN
1520 PRINT [...]"SPC(15)
1524 REM HOME 6#CRSR DOWN YELLOW BROWN
1525 PRINT"[...]SPC(15)B%(0)TAB(20) [...]B%(1) RETURN
1529 REM HOME 7#CRSR DOWN RED
1530 PRINT"[...] SPC(25)HB%:IFHB%=0THENE$(0)=" E$(1)=
" GOTO1550
1535 IFB%(0)=HB/THENE$(0)="<" E$(1)=" GOTO1550
1540 IFB%(1)=HB/THENE$(0)=" " E$(1)=">"
1549 REM HOME P#CRSR DOWN WHITE
1550 PRINT"[...]"SPC(9)E$(0)SPC(21)E$(1) RETURN
2000 S1=0 S2=147 DUR=100 GOSUB12000
2006 REM HOME 22#CRSR DOWN RVS ON RED RVS OFF
2007 PRINT"[...]ALL RED BALLS POTTED -
PLEASE RESELECT [...] RETURN
2009 REM HOME 22#CRSR DOWN RVS ON RED CRSR LEFT
2010 IF(ABS(S%(0)-S%(1)[illegible]=7 AND BN%=21)THEN11000
2011 PRINT"[...]FOUL-"FV" [...] TO PLAYER ",
IFP%=1THEN2013
2012 PRINT"2 S%(1)=S%(1)+FV P%=1 [illegible] GOTO2014
2013 PRINT"1" S%(0)=S%(0)+FV P%=0 [illegible](1)=0
2014 GOSUB1520 GOSUB1500 SN%=0 LPOT%=0
2015 S1=0 S2=147 DUR=100 GOSUB12000
2020 GOTO100
2110 R=INT(RND(1)*6+1 Z$=MID$(B$(VAL(F$)-1),R,1) IFZ$="M"THEN3000
2130 IF Z$="P"THEN4000
2140 IF Z$="F"THEN2010
2150 IF Z$="S"THEN6000
2160 IFZ$="H"THEN7000
2170 IFZ$="R"THEN8000
3000 S1=0 S2=147 DUR=100 GOSUB12000
3005 LPOT%=0 P%=(P%=0) P%=ABS(P%=0)
3009 REM HOME [illegible]#CRSR DOWN RVS ON BLUE RVS OFF
3010 PRINT [...] POT OR SNOOKER [...]"
GOSUB1520 GOTO100
3100 S1=0 S2=147 DUR=100 GOSUB12000
3109 REM HOME 22#CRSR DOWN RVS ON RED
3110 PRINT"[...]"A$(VAL(MID$(F$,BN%,1))-2)"
BALL POTTED-PLEASE
3120 PRINT"RESELECT" RETURN
4000 S1=60 S2=149 DUR=100 GOSUB12000
4001 IF(LPOT%=1 AND BN%<16 THENLPOT%=PV% GOTO4005
4004 LPOT%=PV% IFPV [illegible]VAL(MID$(F$,BN%,1))THENBN%=BN%+1
4005 SN%=0 [illegible]
4006 IF[illegible] THEN[illegible]
4007 REM HOME [illegible] DOWN
4008 PRINT"[...] TAB[illegible]LEFT$(C$,BN%-1)
4018 GOSUB1500 GOSUB1520
4019 REM HOME 12#CRSR DOWN RVS ON BLUE RVS OFF
4020 PRINT [...] A$(PV%-1)" BALL POTTED[...]"
IFBN%=[illegible]THEN10000
4030 GOTO100
6000 IF ABS([illegible]) =7 AND BN%<21THEN2110
6005 S1=34 S2=[illegible] DUR=100 GOSUB12000
6010 SN%=1 [illegible] LPOT%=0 P%=ABS(P%=0)
6019 REM HOME 12#CRSR DOWN RVS ON BLUE
6020 PRINT [...] OU ARE SNOOKERED ON "
6029 REM RVS OFF
6030 PRINTA$(VAL(MID$(F$,BN%,1))-1)" BALL[...] GOTO100
7000 S1=34 S2=75 DUR=100 GOSUB12000
7005 LPOT%=0 SN%=0 [illegible] GOSUB1520 P%=ABS(P%=0)
7009 REM HOME 18#CRSR DOWN RVS ON BLUE RVS OFF
7010 PRINT [...]"A$(PV%-1)" BALL [illegible]HIT[...]" GOTO100
8000 IF(ABS(S%(0)-S%(1)[illegible] AND BN%=21 THEN11000
8001 S1=0 S2=147 DUR=100 GOSUB12000
8004 REM HOME 22#CRSR DOWN RVS ON RED CRSR LEFT
8005 PRINT [...]FOUL-"F[...] TO PLAYER "
IFP%=1THEN8012
8011 PRINT"2 & REPLAY" [illegible] GOTO8013
8012 PRINT"1 & REPLAY" [illegible]+PV" [illegible](1)=0
8013 GOSUB1520 GOSUB1500 LPOT%=0 GOTO100
9000 S1=0 S2=147 DUR=100 GOSUB12000
9004 REM HOME 22#CRSR DOWN RVS ON RED RVS OFF
9005 PRINT"[...]OU ARE SNOOKERED AND MUST
PLAY OUT OF IT[...] GOTO100
9100 S1=0 S2=147 DUR=100 GOSUB12000
9104 REM HOME 22#CRSR DOWN RVS ON RED RVS OFF
9105 PRINT"[...] CAN'T PLAY A
SNOOKER-BLACK BALL GAME[...] GOTO100
9200 S1=0 S2=147 DUR=100 GOSUB12000
9204 REM HOME 22#CRSR DOWN RVS ON RED RVS OFF
9205 PRINT [...]OU ARE NOT SNOOKERED [...]"
GOTO100
9999 REM HOME 2#CRSR DOWN BLACK
10000 S1=60 S2=149 DUR=150 GOSUB12000
10001 IFS%(0)=S%(1) THEN13000
10002 PRINT"[...]FRAME TO PLAYER " [illegible]
THENPRINT"1" F%(0)=F%(0)+1 GOTO10010
10005 PRINT"2" F%(1)=F%(1)+1
10010 GOSUB1510
10019 REM HOME 11#CRSR DOWN,WHITE
10020 PRINT [...]PRESS 1=ANOTHER FRAME
2=2 NEW PLAYERS 3=STOP"
10030 GETF$ IFF$<"1" ORF$>"3" THEN10030
10040 IFF$="3"THENEND
10050 IFF$="1"THENGOTO20
10060 IFF$="2"THENRUN
10099 REM HOME 9#CRSR DOWN BLACK
11000 S1=60 S2=149 DUR=150 GOSUB12000
11002 PRINT [...]LL FRAME TO PLAYER "
11005 IFP%=0THENPRINT"2" F%(1)=F%(1)+1 GOTO10010
11010 PRINT"1" F%(0)=F%(0)+1 GOTO10010
12000 S1=54272 GOSUB12020 POKES1+6 120 POKE54296,
15 POKE54273 S1 POKE54272,62
12010 POKES1+4 17 FORN=1TODUR NEXT
12020 FORN=S1TO S1+24 POKEN 0 NEXT RETURN
13000 BN%=21 P%=ABS(P%=0)
13009 REM HOME 22#CRSR DOWN RVS ON RED
13010 PRINT [...]DRAW - BLACK RESPOTTED"
13019 REM HOME 2#CRSR DOWN BLACK
13020 PRINT [...]TAB(30) RIGHT$(B$,1)
13029 REM HOME 2#CRSR DOWN BLACK
13030 PRINT [...]TAB(10) LEFT$(C$,20) GOTO100
14000 REM CLR SCREEN BLACK
14001 PRINT "[...]DO YOU REQUIRE INSTRUCTIONS? Y/N"
14010 GETF$ IFF$=""THEN14010
14020 IFF$="N"THEN RETURN
14029 REM CLR SCREEN
14030 PRINT "THIS GAME FOLLOWS THE GENERAL RULES OF SNOOKER.
THE BALLS AVAILABLE"
14040 PRINT" AND THEIR VALUES ARE DISPLAYED AT THE TOP OF THE
SCREEN." PRINT PRINT
14050 PRINT"PRESS A KEY AS INDICATED TO SELECT THE BALL
YOU WANT TO TRY TO HIT (TH"
14060 PRINT"E OBJECT BALL)." PRINT"THE RESULT OF YOUR STROKE
IS THEN DISPLAYED."
14070 PRINT IF YOU MISS, PLAY PASSES TO THE OTHER PLAYER
IF YOU POT THE BALL "
14080 PRINT"YOU GAIN THE POINTS VALUE OF THAT BALL AND MUST
PLAY ANOTHER SHOT."
14090 PRINT"IF A SNOOKER IS LAYED PLAY PASSES TO THE OTHER
PLAYER WHO MUST PLAY"
14100 PRINT OUT OF" PRINT"IT IF A FOUL STROKE IS THE RESULT,
THE POINTS VALUE GOES"
14110 PRINT" TO THE OTHER PLAYER AND PLAY TRANSFERS.
14120 PRINT"BALLS MUST BE POTTED IN THE ORDER RED COLOUR,RED
COLOUR UNTIL ALL "
14130 PRINT REDS ARE POTTED AND THEN THE COLOURS IN ORDER "
GOSUB15000
14139 REM CLR SCREEN
14140 PRINT"[...]A SNOOKER MAY BE ATTEMPTED BY SELECTING KEY 8.
THE RESULT MAY BE A "
14150 PRINT"SNOOKER FOUL OR MISS AND PLAY CONTINUES AS NORMAL
14160 PRINT PRINT"IF A SNOOKER IS LAYED THE OPPONENT MUST PLAY
OUT OF IT [illegible] THE "
14170 PRINT"FOLLOWING RESULTS MAY ENSUE "
14179 REM RVS ON RVS OFF
14180 PRINT PRINT"[illegible] BALL IS HIT AND PLAY TRANSFERS.
14189 REM RVS ON RVS OFF
14190 PRINT PRINT"[illegible] BALL IS POTTED AND SAME PLAYER
CONTINUES WITH HIS BREAK " PRINT
14199 REM RVS ON RVS OFF
14200 PRINT"[illegible] POINTS VALUE OF BALL ON WHICH SNOOKER
WAS LAYED ARE AWARDED
14210 PRINT" TO OPPONENT AND PLAY TRANSFERS."
14215 REM RVS ON RVS OFF
14220 PRINT PRINT"[...]FOUL & REPLAY [...] POINTS VALUE OF BALL ON
WHICH SNOOKER WAS LAYED ARE"
14230 PRINT AWARDED TO OPPONENT AND SAME PLAYER CONTINUES TO
TRY TO PLAY OUT OF"
14240 PRINT SNOOKER." GOSUB15000
14245 REM CLR SCREEN
14250 PRINT"IF ONLY THE BLACK REMAINS AND THERE ARE 7 OR LESS
POINTS BETWEEN THE "
14260 PRINT"TWO SCORES A SNOOKER MAY NOT BE LAYED AND THE
FRAME IS FORFEITED
14270 PRINT"IF A PLAYER & [illegible] RESULTS IN A FOUL "
14279 REM [illegible]
14280 PRINT"[...]DO YOU WISH TO SEE INSTRUCTIONS AGAIN?
Y [illegible] GOTO14010
14999 REM RVS ON
15000 PRINT"[...] PRESS ANY KEY TO CONTINUE. "
15010 GETF$ IFF$=""THEN15010
15020 RETURN
```

At your command

Extend your repertoire of Basic commands with this program
by **Robert Kirkland**

This program adds 14 extra commands to the Spectrum's Basic without any extra hardware. It consists of a block of machine code which is placed at address 62700 and is 2600 bytes in length.

When the code has been entered it should be saved to tape or microdrive. If you have a microdrive then you could save a short program called *run* which loads in the code after clearing space for it. (NB It is very important that Ramtop is altered to allow space for the code or it will be corrupted.)

To activate the new commands you have to call a machine code routine at address 65285, and this call must be put at the beginning of any programs which use the extra commands.

Extra Commands

All of the commands are prefixed by an asterisk and the keyword is typed in full. In statements numeric expressions can be used to replace numbers.

Mem – Prints out the amount of memory left for programming.

Delete x,y – Deletes all Basic lines x and y inclusive.

Renum x,y – Renumbers a Basic program starting at x in increments of y.

Wash x – Changes all of the screen colours to attribute x.

Scroll – This statement must be followed by a single letter which indicates which direction to *Scroll* the screen in, and whether to *Scroll* by a pixel or a character. L or R for left or right. V or A for up or down. Lower case indicates pixel movement, upper case character movement.

Sound a,b,c,d – Produces a sound which can rise or fall with varying pitch and in using this it is possible to produce some respectable sound FX. a is the length of note, b is the starting pitch, c is the rate at which the note alters: a high value causes it to alter slowly. d should have a value of 1 or 0. A 1 produces a rising note and 0 produces a falling note. All of the parameters should be in the range 0-255.

Exp d – produces an explosion sound, d is the duration and should be in the range 0-65535.

Laser – Produces a sound like a laser gun. No parameters.

Disable – Disables a break key.

Enable – Enables the break key after disable statement.

On Error Goto – After this statement an error will not cause the program to stop but a jump is made to line n.

On x Goto a,b,c,... – Expression x should evaluate to an integer and then a jump is made to the xth line number after the Goto. (NB In this command the *Goto* keyword is used.)

Call n – A call is made to a machine code routine at address n.

Poke x,y – This allows you to poke a 16-bit number into two addresses the first being x.

Goto x,y – Goto line x statement y.

If an error occurs when a program is being run or when a line fails a syntax check, then the computer jumps to an address where the error is displayed. This address is stored in Ram in the machine stack and is pointed to by the system variable *Err Sp*. So if this address in the machine stack is altered, then when one of the new commands is encountered, instead of an error occuring the machine code routine is called and the command can be executed. If the error is not caused by one of the new commands or if there is an error in one of the other commands then the error routine is called.

If you find typing in long listings difficult (who doesn't!) then cassette copies of the program are available from me for just £1.95, at 16 Thame Park Road, Thame, Oxon.

```
  8 REM HEX CHECKER
 10 LET c=62700
 20 FOR j=1 TO 289
 30 LET z$=""
 40 LET c1=c
 50 FOR i=1 TO 9
 60 LET x=PEEK c
 70 LET w=INT (x/16)
 80 LET x$=CHR$ (w+48+(7*(w>9))
)
 90 LET y=x-(INT (x/16))*16
100 LET x$=x$+CHR$ (y+48+(7*(y>
9)))
110 LET z$=z$+x$+" "
120 LET c=c+1
130 NEXT i
140 LPRINT c1," ",z$( TO 26)
150 NEXT j
```

```
  5 REM HEX LOADER
 10 LET c=62700
 20 FOR j=1 TO 289
 30 LET z$=""
 40 LET c1=c
 50 FOR i=1 TO 9
 60 INPUT "HEX NUMBER ", LINE X
$
 70 LET W$=X$(2)
 80 LET X=(CODE W$)-48-(7*(W$>"
9"))
 90 LET Y$=X$(1)
100 LET X=X+((CODE Y$)-48-(7*(Y
$>"9")))*16
110 LET Z$=Z$+X$+" "
115 POKE C,X
120 LET c=C+1
130 NEXT i
140 PRINT c1," ",z$( TO 26)
150 NEXT j
```

```
62700 FD CB 47 0E FD CB 47 4E C2
62709 1E FE FD CB 47 46 28 10 21
62718 03 13 3A 3A 5C FE 14 03 04
62727 FE 0C 28 0F E1 EC F4 E5 FD
62736 3E 00 FF FD CB 01 AE C3 7D
62745 10 3A 3A 5C FE 00 28 3C FD
62754 CB 01 7E 28 15 21 EC F4 E5
62763 FD CB 47 7E 2A 07 CD EC FE
62772 FD CB 47 8E C3 07 12 28 CD
62781 03 13 FD 36 00 FF 2A 5B 5C
62790 CD A7 11 21 EC F4 E5 FD CB
62799 47 7E 28 07 CD EC FE FD CB
62808 47 BE C3 84 10 CD EC FE FD
62817 C0 47 FE 2A 6D 0C 20 7E FE
62826 CA 23 22 04 5B 00 22 7E FE
62835 4D 28 54 E7 FE 45 28 5E E7
62844 FE 4D 20 41 E7 FE 0D 28 00
62853 FD 35 00 00 FE 3A 28 04 FD
62862 3E 00 FF FD 3E 22 00 FD CB
62871 01 7E 00 0C 21 EC F4 E5 01
62880 57 12 E6 C3 E5 FE 20 2A 5B
62889 5C E5 C1 2A 02 5C A7 ED 42
62898 E5 3E 02 CD 01 15 C1 CD 2E
62907 0D CD E3 0D 3E 0D D7 21 EC
62916 F4 E5 C3 E5 FE 28 25 04 58
62925 7E 22 5D 5C FE 44 C2 4B F6
62934 E7 FE 45 C2 C4 F8 E7 FE 4C
62943 CA 21 F5 E7 FE 45 C2 21 F5
62952 E7 FE 54 C2 21 F5 E7 FE 45
62961 C2 21 F5 E7 6F FD 36 00 FF
62970 FD 35 25 00 CD 75 1C FD CB
62979 00 7E CA 21 F5 FE 0D CA 18
62988 F5 FD 35 00 0E FE 3A C2 21
62997 F5 FD 36 FF 0E 02 34 FE 01
63006 0F F2 3C 04 0A 1A DE 40 ED
63015 1A 3C 00 E4 02 D7 32 5D D2
63024 12 BC C0 A4 32 5D D2 12 0C
63033 C2 A4 32 D5 00 DE 13 00 1A
63042 3C 1A 01 1D DE F5 44 DD A2
63051 A3 81 01 AC 3D 9E 0B 18 01
63060 8C 3D 8E 00 18 01 AD 3D DE
63069 05 18 01 80 3D DE 0A 18 01
63078 03 3D DE 0A 18 01 03 3D DE
63087 E5 18 01 03 D7 D0 01 AD D7
63096 00 01 AA 35 05 07 01 00 35
63105 A5 05 01 03 35 40 05 01 0D
63114 35 00 05 01 0A 35 C0 05 01
63123 05 35 3F 0B 3C DE 0A 22 18
63132 01 F2 D7 F0 02 C9 FF F4 01
63141 C5 3D DE 00 02 C9 FF 00 02
63150 34 FE 01 DF F8 3C 64 0A DF
63159 DE FF 0F FE E0 FF 1A 0E DC
63168 12 4F 50 ED 03 01 A7 C7 0E
63177 EE FF A7 7E 20 FF 25 1E DC
63186 12 4F EC 0E 01 A4 DF 0D DE
63195 13 00 1A 3C 1A 01 DF 18 01
63204 F2 D7 F6 66 C0 FF F4 01 C6
```

```
63213 3D DE 0A 02 C9 FF 0B 02 34
63222 FE 01 DF F6 3C 04 0A DF DE
63231 08 A0 FE E8 FF 1A 2E D4 12
63240 47 50 ED 53 01 A7 C7 0E 2E
63249 00 AE FE E2 FF 8A 1E D4 12
63258 47 E4 5B 01 A0 DF 8D DE 13
63267 05 1A 3C 1A 01 33 D5 AC A3
63276 12 B4 C2 A6 14 D5 24 A3 5B
63285 12 AD 37 16 A8 DC A1 14 12
63294 BD 14 CF F6 DC A1 DC A8 DC
63303 E5 07 10 DF 1A 12 B4 C8 A4
63312 DC A1 DC A8 DC E5 14 D8 26
63321 A3 3B 12 AD 16 D7 F4 AE DC
63330 A1 14 C5 12 8D 16 C7 10 D4
63339 2E E4 3C 1A C6 33 D8 F8 A4
63348 DD A2 A3 01 01 AC 3D E8 27
63357 15 01 80 3D DE 0A 18 01 AA
63366 3D DE 0A 18 01 61 3D DE 0A
63375 18 01 8B 3D DE 0A 18 02 C9
63384 FF 00 02 C9 D9 FF 32 30 E3
63393 02 34 FF 01 35 DE 0A 01 D3
63402 3D DE 0A 18 32 0E E3 02 34
63411 FF 01 35 DE 0A 01 F2 D7 F8
63420 02 C8 FF F4 01 C8 3D DE 0A
63429 02 C9 FF 00 02 34 FE 01 DF
63438 F8 3C 04 0A C5 32 2A D2 10
63447 FE D7 F9 02 34 08 10 E7 F8
63456 02 34 03 09 30 2A D2 90 1A
63465 32 2A D2 1E A2 1A 2A 32 2A
63474 D2 2E 12 A0 0A C5 07 A3 E2
63483 28 E0 F1 01 11 CF 12 B6 6C
63492 CF 01 DA DF 0B 02 34 58 09
63501 DF FC E2 E7 FE E3 EA 0F 1F
63510 04 DE 13 0B 1A 3C 1A 01 DF
63519 D5 F8 A4 DD A2 A3 01 01 AA
63528 3D 0C 07 10 01 A7 3D 58 07
63537 18 01 AF 3D DE 0A 18 02 C8
63546 FF 00 02 C8 D8 FF 32 7D E2
63555 02 34 FF 03 35 DE 0A 01 F0
63564 C7 FE 02 C8 FF F4 01 C8 3D
63573 DE 0A 02 C9 FF 00 00 34 FC
63582 01 38 84 0A 32 8D D8 0C C8
63591 07 A3 F0 F0 F8 F7 D2 FF F7
63600 2C 01 11 EF F7 D3 FF AA A3
63609 50 12 A2 10 AD EE 03 FF E8
63618 02 0E C7 FE C2 E0 C0 DF 20
63627 F4 B7 42 DF 2B 04 DE 13 0B
63636 1A 3C 1A 01 DF D5 F8 A4 DD
63645 A2 A3 01 01 A8 3D 0C 04 18
63654 01 00 3D DE 0A 18 01 AC 3D
63663 DE 0A 18 03 07 3D DE 0A 18
63672 02 C9 FF 00 02 C9 D9 FF 32
63681 7D E3 02 34 FF 01 35 DE 0A
63690 01 F2 D7 F8 02 C8 FF F4 01
63699 C8 3D DE 0A 02 C9 FF 00 02
63708 34 FE 01 30 04 0A 32 5D D2
63717 DE FF A7 0E FF FC 0E DC C4
63726 00 4C DF 08 DE 13 0B 1A 3C
63735 1A 01 C5 10 01 F2 D7 F8 02
63744 C8 FF F4 01 C5 3D DE 0A 02
63753 C9 FF 00 02 34 FE 01 30 04
63762 0A DE FE FF EE 1F A4 E7 FE
63771 DF 2A 1A C1 FC FE DF FF 3A
63780 1A 12 4F 2E F1 1F 12 4F F9
63789 F0 F8 C2 38 DF 0F C1 FF 8E
63798 ED EC EF 03 1E 2E D8 03 01
63807 07 C7 25 14 6C D3 0F 03 EE
63816 FF A7 DE DF A7 F8 1F FD 12
63825 4F DE 13 0B 1A 3C 1A 01 2E
63834 10 01 F2 D7 F8 02 C8 FF 00
63843 01 C8 3D DE 0A 02 C9 FF 00
63852 02 34 FE 01 35 64 0A DE 00
63861 A0 EE 00 A4 07 FE EE 2A 1A
63870 C1 FC FE DF FF 3A 1A 12 47
63879 2E F1 1F 12 47 F0 05 F0 3E
63888 C2 DF 8F C1 FF 0E E7 FE 0D
63897 ED E4 EF 03 1E 2E DA 03 01
63906 AF CF 20 20 F9 DF ED E4 CF
63915 03 EE FF A4 DE 1F A8 FE 1F
63924 FD 12 47 DE 13 0B 1A 3C 1A
63933 01 D7 38 01 F2 D7 F8 0A C9
63942 FF F4 01 C5 3D DE 0A 02 CE
63951 FF 00 02 34 FE 01 30 04 0A
63960 DE 7F 8F F0 3F 3A F0 E2 01
63969 34 D0 80 DC 01 34 D0 AE CF
63978 F9 D4 01 34 38 08 DC EF 0E
63987 DC 3E EF 10 DE 13 0B 1A 3C
63996 1A 01 1F 18 01 F2 D7 F8 02
64005 C8 FF F4 01 C8 3D DE 0A 02
64014 C9 FF 00 02 34 FE 01 30 04
64023 0A DE 00 A0 F0 3F 3A F0 E3
64032 01 34 C0 80 D4 01 34 C8 8B
64041 CF F9 DC 01 34 00 50 D4 EF
64050 0E D4 3E EF 10 DE 13 0B 1A
64059 3C 1A 01 0D 10 01 F2 D7 F6
64068 02 C9 FF F4 01 C5 3D DE 0A
64077 02 C9 FF 00 02 34 FE 01 3B
64086 04 0A DE FF 6F F0 FC 3A F9
64095 F7 3A F9 F3 3A F9 DF 1A EE
64104 FF FE 20 2E 01 ED 14 DC EF
64113 0E EE 1F FF E0 3E EF 18 3E
64122 07 01 FE D7 E5 3A F9 DF EE
64131 1F F0 1A 00 12 AD 2E 01 ED
64140 14 DC EF 0D EE FF F8 00 12
64149 AD 3E EF 30 3E 07 01 FE D7
64158 ED 3A F0 DF EE DF FF 1A E8
64167 2E 01 ED 14 DC EF 08 3E EF
64176 03 F0 DF C0 FF DC 0F 04 DC
64185 13 0B 1A 3C 1A 01 EE 10 03
64194 F2 D7 FA 02 C8 FF 00 01 C8
64203 3D DE 0A 02 C8 FF 00 02 34
64212 FE 01 3B 04 0A DE 00 A8 F0
64221 FC 3A F6 F7 3A F9 F8 3A F9
64230 DF 1A EE FF FE 08 12 AD 2E
64239 01 ED 14 D4 EF 0D EE 1F FF
64248 00 12 AD 3E EF 19 3E 07 01
64257 FE D7 F9 3A F9 DF EE 1F F9
64266 3A E0 3E 01 ED 14 D4 EF 0B
64275 EE FF F8 E6 3E EF 38 3E E7
64284 01 FE D7 EC 3A F9 DF EE DF
64293 FF 1A 50 12 AD 2E 01 ED 14
64302 D4 EF 0D 3E EF 08 F9 DF C9
64311 FF D4 CF 04 DE 13 0B 1A 3C
64320 1A 01 EE D5 F8 A4 DD A2 A3
64329 01 01 AD 3D 3B 04 18 01 0A
64338 3D DE 0A 18 01 01 3D DE 0A
64347 18 01 AA 3D DE 0A 18 01 B2
64356 3D DE 0A 38 02 C9 FF 00 02
64365 C9 D9 FF 32 0E E3 02 34 FF
64374 01 35 DE 0A 03 F2 D7 F6 02
64383 C9 FF F4 01 C8 3D DE 0A 02
64392 C9 FF 00 02 34 FE 01 35 04
64401 0A 32 8D D2 3A 32 8D D2 3A
64410 2E 3E DB AC A3 2A E7 FE 02
64419 14 D8 E4 A3 3B 12 AD 14 2E
64428 D7 F9 0D DC 8C 0C 14 F8 14
64437 8A A1 DC A6 DC E8 E7 10 DE
64446 13 0B 1A 3C 1A 01 D8 FB A6
64455 DD A2 A3 01 01 B5 3D E7 03
64464 18 01 00 3D DE 0A 18 01 AC
64473 3D DE 0A 18 01 0E 3D DE 0A
64482 18 01 0D 3D DE 0A 18 01 B3
64491 3D DE 0A 18 03 0A 3D DE 0A
64500 18 01 F2 D7 F8 02 C8 FF F4
64509 01 C8 3D DE 0A 02 C9 FF 00
64518 02 34 FE 03 35 00 0A 02 36
64527 0E 30 DE 13 00 1A 3C 1A 01
64536 D8 F8 A4 DD A2 A2 01 01 0A
64545 3D 00 03 18 01 01 3D DE 0A
64554 18 01 0E 3D DE 0A 18 01 0D
64563 3D DE 0A 18 01 03 3D DE 0A
64572 18 01 0A 3D DE 0A 18 01 F0
64581 D7 F8 02 C8 FF 00 01 C8 3D
64590 DE 0A 02 C9 FF 00 02 34 FE
64599 01 35 04 0A 02 34 05 70 DE
64608 13 0B 1A 3C 1A 01 D8 F8 A4
64617 DD A2 A3 01 01 BC 3D 3F 03
64626 18 01 0E 3D DE 0A 18 01 03
64635 3D DE 0A 18 01 62 3D DE 0A
64644 18 02 C9 FF 00 02 C9 D9 FF
64653 32 7D E3 02 34 FF 01 35 DE
64662 0A 01 F2 D7 F8 02 C8 FF F4
64671 01 C8 3D DE 0A 02 C9 FF 00
64680 02 34 FE 01 35 58 0A 32 5D
64689 D2 12 0C 40 A3 30 FF FF DE
64698 13 0B 1A 3C 1A 01 D8 F8 A4
64707 DD A2 A3 01 01 AF 3D E2 02
64716 18 01 00 3D DE 0A 18 01 B4
64725 3D DE 0A 18 01 BA 3D DE 0A
64734 18 02 C9 FF 00 02 C9 D9 FF
64743 32 5D E3 02 34 FF 01 35 DE
64752 0A 01 F2 D7 FE 00 C9 FF F4
64761 01 C8 3D DE 0A 02 C9 FF 00
64770 02 34 FE 01 30 04 0A 32 5D
64779 D2 3A 32 5D DE 1E 02 FD FC
64788 03 FD DE 13 0B 1A 3C 1A 01
64797 D8 F8 A4 DD A2 A3 01 01 BA
64806 3D CC 01 38 01 01 3D DE 0A
64815 18 01 0A 30 0D 02 18 01 AD
64824 3D DE 0A 18 01 AD 3D DE 0A
64833 18 01 0B 3D DE 0A 18 01 AD
64842 3D DE 0A 18 03 00 3D DE 0A
64851 18 01 08 3D DE 0A 18 03 A0
64860 3D DE 0A 18 01 B2 3D DE 0A
64869 18 02 C9 FF 00 02 C9 D9 FF
64878 32 7D E3 02 34 FF 01 35 DE
64887 0A 01 F2 D7 F8 02 C8 FF F4
64896 01 C8 3D DE 0A 02 C9 FF 00
64905 02 34 FE 01 38 04 0A 32 5D
64914 D2 12 0C 50 A3 02 34 E9 31
64923 DE 13 0B 1A 3C 1A 01 00 C8
64932 FF 00 02 C9 D9 FF 32 7D E3
64941 02 34 FF 01 35 DE 0A 01 C5
64950 3D DE 0A 18 01 13 3D DE 0A
64959 E9 FF DE 55 A4 2A 10 32 7D
64968 E3 2E 02 34 FF 01 E8 38 DE
64977 0A 01 D3 D7 11 01 F2 D7 F8
64986 02 C8 FF F4 01 C5 3D DE 0A
64995 02 C9 FF 20 02 C8 01 7E CA
65004 58 F8 21 3A 0B 42 C5 E5 CD
65013 A2 2D E1 71 23 70 23 C1 10
65022 F3 E5 CD A2 2D E1 26 A7 00
65031 ED 42 ED 42 5B 20 8E ED 53
65040 42 5C 3E 00 32 46 5C 21 EC
65049 F4 E5 C3 E5 FE FD C8 47 0E
65058 2A A0 5C 20 42 5C AF 32 44
65067 5C 21 EC F4 E5 C3 7B 18 2A
65076 04 50 22 5D 5C 7E FE 47 C2
65085 98 FE E7 FE 4F C2 21 F9 E7
65094 FE 54 C2 21 F6 E7 FE 4F C2
65103 21 F0 E7 FD 35 00 FF FD 35
65112 20 00 CD 7A 1C FD C8 00 7E
65121 CA 21 F3 FE 0D 20 00 FD 35
65130 00 30 FE 3A C2 01 F5 FD 36
65139 0A FF FD C8 01 7E CA 00 F5
65148 CD D6 2D 32 44 5C CD A2 2D
65157 ED 43 42 5C 21 EC F4 E5 C3
65166 E5 FE 2A 24 5B 22 5D 5C 7E
65175 FE 4C C2 21 F6 E7 FE 41 C2
65184 21 F5 E7 FE E3 C2 21 F5 E7
65193 FE 45 C2 21 F5 E7 FE 52 C2
65202 21 F5 E7 FE 0D 20 00 FD 35
65211 00 FF FE 3A C2 21 F5 FD 36
65220 00 FF FD C0 01 7E CA 00 F5
65229 3A 40 5C 2F 0F 0F 1E 01 F3
65238 D3 FE E6 10 43 10 FE 1C 20
65247 F5 F0 21 EC F4 E5 CD EC FE
65256 C3 70 15 20 01 16 F8 01 D8
65265 07 18 01 20 7E 27 77 23 00
65274 78 E1 20 F7 C9 00 00 00 00
65283 00 00 2A 3D EC 35 EC 23 35
65292 F4 AF 39 01 0C C8 00 00 00
```

Eureka!

HERE'S WHAT YOU'VE SAID...

Winbourne,
Dorset. BH22 0EY

Dear Sir,

I must congratulate you on a marvelous game, we purchased Eureka direct from you way back in October, & the whole family have had many amusing hours playing it. Eureka is tremendous value for money, considering there are 5 games included in the price. We have purchased other games recently of round about the £10 mark which we have considered to be daylight robbery! & the interest value has lasted about 1 hour!

So congratulations again, keep up the good work!

Yours faithfully,

J Smart (Mrs)

HERE'S WHAT IT IS...

The storylines travel through five time zones of our history - Prehistoric, Roman Empire, Medieval Britain, Colditz and the Caribbean, where you come face to face with the evil Hugo Von Berg. He is holding us all to ransom and demands to be made Emperor of the World, otherwise he will destroy it. A secret telephone number direct to the British Prime Minister has been specially installed for you to ring when you have worked out the code which will save us all. You must find this code and decipher the telephone number

The new **Eureka!** Hotline number is: **01-879 1166**

We wish you all the best of luck in your search and to help you on your way, will send you a FREE Guide to Adventure Games (no clues to the £25,000 though!) if you send in a stamp plus your name and address to us.

Happy searching!

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COMMODORE 64

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Tied up with strings

Arrays and sorts de-mystified on the CPC464 by ***Geoff Baldwin***

For many people taking their first tentative steps into the wonderful world of computer programming, the most difficult aspect to comprehend is the dimensioned array. Although at first, arrays seem complicated, they really are quite easy to understand

The main reason for using arrays is to keep related data in a program together in one easy to manipulate block. For example, if you were writing a program to store names and addresses, it would be very difficult to handle the information if each item of data for the whole list of names and addressed were stored in the same string. It would be even more difficult to use a different string to store each name and each address

The solution is to use one string and dimension it, for example, *Dim A$(5 2)* This means dimension A$ 5 × 2 What you have to do is imagine a tray, partitioned off into five sections by two sections, into which you can put information to be stored as shown in Fig 1

From Fig 1, you will see that *A$* has been given two dimensions, if you like, a vertical dimension of five and a horizontal dimension of two. From the diagram you will also see that if we examine *A$(3,1)* this would give us "HARRY" and *A$(3,2)* gives us "CARDIFF" Each element of the array is capable of storing more than the odd word as in Fig 1. You could have a full name in *A$(3,1)* and a complete address in *A$(3 2)*. Try the program in Fig 2 out for yourself.

The next program enables you to input five names and addresses one after the other, then prints them out in the order that you input them This is fine if you only wish to sort a few names and addresses but for a long list it would be better if the program could sort and display them either in alphabetical order either by the names or the addresses

Sorting strings or string arrays is another area of programming that requires a little thought Practically everybody can look at a short list of names and mentally sort them into alphabetical order, but when it comes to a long list, say 40 or more, it starts to get difficult When you have a list of 500 or more it then becomes almost impossible to do mentally and very time consuming to do at all by hand. Tasks like this are where the computer begins to show its tremendous speed and power

When we sort a list of names we generally start at the top of the list and sort out the A's, then the B's, then the C's and so on, then we sort the A's into order, the word's second letter, then the third letter, etc etc The computer on the other hand, being a totally inhuman beast, can compare whole words, even whole sentences When sorting words, for instance, it compares logically, looking at each word at a time and compares it with another, then decides which is the greater or lesser of the two

The program in Fig 3 sets up a simple one dimension array, asks for 10 words or names, sorts them into alphabetical order then displays them The way in which it does this is to compare the first word with the second, if the first word is greater than the second, the computer exchanges their respective positions in the list, then goes on to compare the second word with the third If the third word is greater then the second, the computer will leave the words in the same positions and proceed to compare the third word with the fourth and so on to the end of the list It then goes through the whole list to see if it's in order, if not it starts again moving words down the list one place at a time, until the task is completed This method is called a bubble sort. Although there are other methods this is the simplest albeit slowest method Type in the short program and try it for yourself by typing in ten words or names Then try typing in ten words that are very similar like Mary, Mark, Marion, Market etc, and see the results

The next thing to try is sort a two dimension array The program in Fig 4 does this The first part, as in the previous listing, sets up the array and requests the inputs The second part sorts the array Lines 50-60 allow you to choose whether the list is sorted by *Name* or *Address*. Lines 140-150 give you the option of entering new data or re-sort the existing data

Do have a play with the example listings given. Then see if you can write your own programs to incorporate the ideas, a proper address file or a file of your record collection perhaps.

Although the listings in this article were written for the Amstrad CPC 464, they have purposely been kept in simple Basic so that with few exceptions they can be typed into almost any machine Have fun!

Fig 1

10 DIM A$(5,2)

	1	2		1	2
1	A$(1,1)	A$(1,2)	1	TOM	LONDON
2	A$(2,1)	A$(2,2)	2	DICK	LEEDS
3	A$(3 1)	A$(3,2)	3	HARRY	CARDIFF
4	A$(4,1)	A$(4,2)	4	BILL	GLASGOW
5	A$(5,1)	A$(5,2)	5	MARY	OXFORD

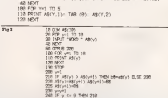


Fig 2

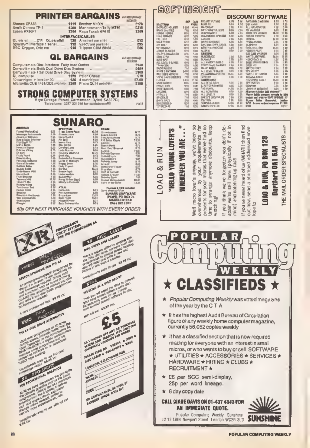
```
10 DIM A$(5,2)
20 FOR Y=1 TO 5
30 INPUT "NAME "; A$(Y,1) INPUT "ADDRESS  A$(Y,2)
40 NEXT
100 FOR Y=1 TO 5
110 PRINT A$(Y,1); TAB (8); A$(Y,2)
120 NEXT
```

Fig 3

```
10 DIM A$(10)
20 FOR y=1 TO 10
30 INPUT "WORD " A$(y)
40 NEXT
50 GOSUB 200
100 FOR y=1 TO 10
110 PRINT A$(y)
120 NEXT
130 STOP
200 y=1
210 IF A$(y) > A$(y+1) THEN b$=a$(y) ELSE 230
220 A$(v)=A$(y+1) A$(y+1)=B$
225 A$(y+1)=B$
230 y=y+1
240 IF y <= 9 THEN 210
250 GOSUB 270
260 IF FLAG =1 THEN 200 ELSE RETURN
270 FLAG =0
280 FOR V=1 TO (y-1)
290 IF A$(v) > A$(v+1) THEN FLAG=1
300 NEXT
```

Fig 4

```
10 DIM a$(5,2): DIM B$(1.2)
20 FOR y=1 TO 5
30 INPUT "NAME ";A$(Y,1)·INPUT "ADDRESS ":
A$(Y,2)
40 NEXT
50 INPUT "ORDER BY NAME (1) OR ORDER BY
ADDRESS (2) PLEASE SELECT ";X
60 IF X <1 OR X>2 THEN 50
70 PRINT
80 GOSUB 190
90 FOR Y=1 TO 5
100 PRINT A$(Y,1); TAB (20);A$(Y,2)
110 NEXT
120 PRINT
130 INPUT" INPUT A NEW SET OF DATA (1) OR
RE-SORT EXISTING DATA (2) ";A
140 PRINT
150 IF A<1 OR A >2 THEN 130
160 IF A=1 THEN RUN
170 IF A=2 THEN GOTO 50
180 STOP
150 '************************* SORT ROUTINE
 *************************
200 Y=1
210 IF A$(Y,X)>A$(Y+1,X) THEN GOTO 220
    ELSE 250
220 FOR V=1 TO 2·B$(1,V)=A$(Y,V)·NEXT
230 FOR V=1 TO 2 A$(Y,V)=A$(Y+1,V)·NEXT
240 FOR V=1 TO 2·A$(Y+1,V)=B$(1,V)·NEXT
250 Y=Y+1
260 IF Y<5 THEN GOTO 210
270 GOSUB 300
280 IF FLAG =1 THEN GOTO 190
290 RETURN
300 FLAG=0
310 FOR V=1 TO 4
320 IF A$(V,X)>A$(V+1,X) THEN FLAG=1
330 NEXT
340 RETURN
```



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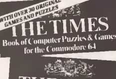
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Quantum Cassette

The one we've all been waiting for – put your QL programs on tape with ***John Rainbow***

One of the unfortunate failings of the QL was once said to be its heavy reliance on microdrives, but now all that has changed, well at least if you are fortunate to own a Spectrum (48/16K) & Interface one

This program was written through necessity, due to the high price tag on microdrives (even through they have come down) and doubts on their reliability I like to keep only the most often used QL software on microdrive and keep all my other valuables backed up on cheap audio tapes, occasionally pulling them off tape and back to microdrive with the *QLtaper* and *Staper* programs listed here

Inside each routine I have tried to keep to the same networking arrangements as used in earlier volumes of *Popular* so as not to confuse unduly, although there is of course nothing wrong in changing.

Down to the basics then *Staper* is to be programmed on the Spectrum (I used the MK III version), and *QLtaper* on the *QL* (I have used the AH version) However, there is no guarantee that it will work on all the different combinations of the two, but it's well worth trying

QLtaper is designed to copy Microdrive files (of about 33K in length using a 48K Spectrum) on to audio cassette tape Moreover, if *QLtaper* has been stored on Mdv1 then it can copy itself on to audio tape Further, for those that have Spectrum wordprocessors, then they may be able to edit Superbasic programs, ASCII Assembly listings, etc, on the Spectrum and, when ready, use *Staper* to put them back on to Microdrive In this way, they can save from not buying the expensive *QL* Editors

Staper is designed to copy back on to the QL the Microdrive files that had been recorded on tape, or one that is still in the Spectrum's memory (Make sure that there is a formatted microdrive in Mdv1.)

The mode of operation should be straightforward. Type in *Staper* on to the Spectrum, and *QLtaper* on to the *QL* and save *QLtaper* on Mdv1. A network lead (eg, the one you use for loading/saving) may then be connected between the righthand side net socket on the Spectrum and the righthand side socket of the *QL* When you are satisfied that these leads are firmly in place both programs may be run incidently, if you forget to plug in the net leads, or if a socket/interface I is faulty, the *QL* will give a *Not Found* error On a more important note, remember not to switch off any of the computers whilst data is passing between them, else you risk damage to their network interfaces!

By now, both machines will be asking questions The answers that you give them are, of course, dependent on what you wish to do, and when answered, they will keep you informed of their progress Three points that should be kept in mind are:

1) If you break into the programs whilst they are networking, remember to close the opened channels before restarting
2) Although actual data transfer is surprisingly quick, opening and closing channels are surprisingly slow Give the QL's Microdrive a chance to stop spinning before sending it a file from the Spectrum
3) Data transfer takes place in shortish bursts so there maybe intervals when you think the computer has crashed. This is quite usual for larger files, it is because the network is buffered Remember if in doubt, press *break*. – don't pull the plug!

The first question that can be answered is the Spectrum's *"Is the QL ready?"*, just give a *'Y'* and *Enter*

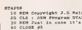
The QL may be answered next, and will instruct you what to do First try saving *QLtaper* on to audio tape If all is well, the Spectrum should very shortly give its *End of File* message Continue by giving *Goto 280* and store it on tape Now continue by sending it back to the QL's Mdv1 (remember point 2)

If the Spectrum ever gives the message *Outsized the Spectrum's Memory*, then the user should find ways to separate the large file into smaller ones that can be coped with and, when brought back, these could be recombined. In the case of Superbasic programs, this is easy Just load the *QL* with the program from Microdrive and give the following as direct commands on the QL – *Net 5* (Enter), *Open #6, Net_10* (Enter) *List #6 line_no to line_no* (Enter) (where the line nos, indicate an interval of Superbasic, see below) Finally, *Close #6*

The full Superbasic syntax of the list command (as shown on page 33 of the User guide) can be used as shown above to create individual blocks that can be saved directly in turn on cassette.

Sorry! In last week's issue the listing for Malcolm Scorer's *Othello* program was inadvertently printed on pages 30 and 31 In addition, on page 30, the last 46 lines of the left hand column (from *09 score*) and the last 10 lines of the right-hand column (from 50 *For i=1. .*) must be deleted. Apologies for the confusion.

```
QLTAPER
100 REMark Copyright J.O.RAINBOW
110 CLS #0
120 CLS
130 PRINT "QL TAPE RECORDER Program."
140 PRINT "Copyright J.D. RAINBOW"
150 PRINT "REMEMBER NOT TO SWITCH OFF DURING NET"
160 PRINT \\\\\
170 INPUT " Mdvi prog. To or From tape
    (T/F)? >";W$
180 IF W$="f" OR W$="F"THEN GO TO 330
190 IF W$="t" OR W$="T"THEN GO TO 210
200 GO TO 170
210 CLS #0
220 INPUT #0;"Program Name from Mdvi's directory?
    >";name$
230 PRINT #0,"The Ql is now ready,
    plug in the net,"
260 PRINT #0,"Answer 'T' to the Specy's question"
250 INPUT #0,"'To or From..' Then press QL's
    ENTER";A$
260 NET 5
270 OPEN_IN #5,neto_10
280 PRINT #0,"Sending."
290 COPY "mdvi_"&name$ TO neto_10
300 CLS #0
310 PRINT #0, "Job Complete"
320 GO TO 120
330 INPUT #0;"Program Name for MDV1's directory?
    >";name$
340 PRINT #0,"Answer 'F' to the Specy's question"
350 NET 2
360 OPEN_IN #4,neti_1
370 OPEN_NEW #5,"mdvi_"&name$
380 REMark Accessing Mdvi
390 PRINT #0,"Wait until MDVi has stoped spining,
    then it's ready & waiting for Specy"
400 REPeat access
410   IF EOF(#4) THEN EXIT access
420   LET dec$=INKEY$(#4)
430 IF CODE(dec$)=0THEN GO TO 450
440 IF CODE(dec$)<>13THEN PRINT #5, dec$;
450 END REPeat access
460 CLOSE #4
470 CLOSE #5
480 CLS #0
490 PRINT #0,"Program "&name$&"is now
    on Microdrive one"
500 COPY "MDVi_"&name$ TO SCR
510 GO TO 130
```



```
STAPER
  10 REM Copyright J.D Rainbow
  20 CLS : REM Program STAPER
  30 REM Just in case it's open
  40 CLOSE #4
  50 PRINT AT 10,13;"QL ON TAPE"
  60 PRINT AT 12,11; J.D.RAINBOW"
  70 PRINT AT 20,1;"IF MESSAGE""END OF FILE"
 "OCCURS,"
  80 PRINT AT 21,1;"JUST GIVE A""GOTO 280"
 "DIRECTLY"
  90 INPUT "Is the Ql ready (Y/N)? >"; LINE q$
 100 REM Wait until ready routine
 110 IF q$="N" OR q$="n" THEN  GO TO 10
 120 INPUT "Program To or From Tape(T/F)?":
 LINE j$
 130 REM Main Menu
 140 IF j$="F" OR j$="f" THEN  GO TO 420
 150 REM Make enough room
 160 CLEAR 32499
 170 LET LO=32499
 180 LET HI=PEEK 23732+256*PEEK 23733
 190 LET OFFSET=3
 200 FORMAT "N";10
 210 OPEN #4;"N";5
 220 FOR Y=LO TO HI
 230 LET A$=INKEY$#4
 240 IF CODE A$=0 THEN  GO TO 230
 250 POKE Y,CODE A$
 260 NEXT Y
 270 PRINT "OUTSIZED THE SPECTRUM'S MEMORY!"
 280 INPUT "Program Name? >": LINE n$
 290 SAVE n$CODE LO+OFFSET,Y-LO
 300 PRINT "VERIFYING"
 310 VERIFY n$CODE LO+OFFSET
 320 PRINT "CHECKING": POKE 23692,255
 330 FOR C=LO+OFFSET TO Y
 340 IF PEEK C=0 THEN  GO TO 390
 350 LET P$=CHR$ PEEK C
 360 IF CODE P$=10 THEN  LET P$=CHR$ 13
 370 LPRINT P$;
 380 NEXT C
 390 INPUT "CURRENT BUFFER BACK TO QL (Y/N)?":
 LINE G$
 400 REM Final Verify or from tape?
 410 IF G$="Y" OR G$="y" THEN  GO TO 460
 420 CLEAR 32499
 430 INPUT "Name of program from tape? >";
 LINE t$
 440 LOAD t$CODE
 450 LET OFFSET=3: LET LO=32499: LET Y=PEEK
 23732+256*PEEK 23733: GO TO 320
 460 INPUT "ATTACH NET LEAD(RIGHT HAND NETS)
 THEN, WHEN QL'S READY & WAITING,PRESS THE
 SPECTRUM'S ENTER", LINE s$:  CLOSE #4
 470 FORMAT "N";1
 480 OPEN #4;"N";2
 490 FOR L=32499 TO PEEK 23732+256*PEEK 23733
 500 LET K=PEEK L
 510 IF K=0 THEN  GO TO 540
 520 PRINT #4;CHR$ K
 530 NEXT L
 540 CLS
 550 CLOSE #4
 560 PRINT "JOB COMPLETE"
 570 GO TO 120
```

Printing pretty

***Boris Allen** takes you on a whistle-stop tour of the Epson Printer in Printing Pretty*

The flexibility of modern printers is well known. The most common style of printer is that derived from the Epson marque. Not only are Epson printers the most popular individual make of printer, but also dot matrix printers are increasingly providing Epson emulation modes. The key to these modes are the Epson escape sequences, which are the means by which the operation of the printers are controlled via the input channel.

Figure 1 shows a specimen of the Epson (emphasized) standard Pica font, Figure 2 shows an example of the Epson proportional font, and the final example (Figure 3) shows the proportional font with the width of the space reduced by half. The first two styles are produced by standard means, and the third style requires some redesign of the existing standard proportional font.

The standard Epson dot matrix printers have a 2K Ram buffer, which can be used to smooth the printing of text with ordinary fonts (eg Figures 1 or 2). If the buffer is de-selected (by setting Dip switch 1-4 Off) then the different standard fonts can be loaded into that portion of memory. As the fonts are now in malleable Ram, rather then stored in unchanging Rom, the shapes of the characters can be redefined.

To prepare the printer for a character set in Rom, therefore, two sequences have to be followed: first the character sets have to be loaded into the Ram and, second, the character sets in Ram have to be selected. The sequences are known as 'escape' sequences because the first character in each sequence is the *Esc* character.

The ASCII code for 'Escape' is 27, and the ASCII code for '0' is 48 (ASCII is the American Standard Code for Information Interchange). ASCII codes have many applications, and for example, in Basic, Chr$(48) is equivalent to '0' (in BBC Basic *VDU 48*). A further experiment is to hold down the *Ctrl* key whilst pressing the *[* key. Depending on the computer, the reaction is equivalent to pressing the *Escape* key.

The purpose of this short diversion is to explain the meaning of the next two lines, which are commands to be sent to the printer:

Lprint Chr$(27),":",Chr$(0),Chr$(0),
Chr$(0),L print Chr$(27),"%",Chr$(1),
Chr$(0)

The first line is a sequence of five characters. There are an escape (ASCII code 27), a colon (:), and three examples of the character which has an ASCII code of zero. (The ASCII character of 0, corresponds to a control code produced by *Ctrl-@*.) These five characters comprise the escape sequence which loads copies of the ordinary fonts into the 2K Ram buffer.

The second line is comprised of four characters, the escape, the percentage sign (%), the ASCII character with a code of one *(Ctrl-A)*, and the ASCII character corresponding to zero. This sequence selects the character set which has been downloaded into Ram for use by the printer. Those with access to Epson manuals should compare the above lines to the sequences given in the manuals for *Esc:* and *Esc % 1*.

I am not trying to attempt give a course of instruction in use of the Epson series of printers, and so in this section I can only give the outlines of procedures of redefining characters. My task is made even easier because I am redefining the space character.

The redefinition of characters for the Epson series is accomplished by use of the *Esc* and escape sequence (termed the 'download character definition' by Epson).

The lower case letter 'i' is a very narrow letter, which in the proportional font (Figure 2) is not set in space (in comparison in the word 'limited' in Figure 1, the first i is especially isolated). In the Epson documentation, the escape sequence fro downloading character definitions (ESC &) is given as

LPrint
Chr$(27),"&", Chr$ (0),Chr$(n),Chr$(m), Chr$(a),Chr$(p1),Chr$(p2), ... Chrs$(p11),

where the 'p' values are numbers calculated to produce the appropriate pattern of dots to redefine the space, to half size,

LPrint Chr$(27),"&",Chr$(0)," ",Chr$(5),
For I=1 To 11 . LPrint Chr$(0), : Next I

Between ," and " there are two spaces. To understand the full workings of this redefinition one needs to consult the Epson documentation.

I have provided two programs: the first uses a Microsoft style of Basic, and the other uses BBC Basic.

Whoops .. in last week's issue the listings for S Alg's *Matrices* program was inadvertently printed on pages 27 and 28

Fig 1

```
The flexibility of modern printe
  The most common style of print
EPSON marque.  Not only are EPSC
individual make of printer, but
increasingly providing EPSON emu
```

Fig 3

```
The flexibility of modern printers is well known.
 The most common style of printer is that derive
EPSON marque. Not only are EPSON printers the 
individual make of printer, but also dot matrix p
increasingly providing EPSON emulation modes. T
these modes are the EPSON 'escape sequences', w
```

Fig 2

```
The flexibility of modern printers is well known.
  The most common style of printer is that deri
EPSON marque.  Not only are EPSON printers the
individual make of printer, but also dot matrix p
increasingly providing EPSON emulation modes.  T
```

MICHOSOFT BASIC CONTROL OF PRINTER

```
10   LPRINT CHR$(27); ":"; CHR$(0);
CHR$(0); CHR$(0);
: REM download character set
20   LPRINT CHR$(27); "%"; CHR$(1);
CHR$(0)
: REM select downloaded character
set
30   LPRINT CHR$(27); "&"; CHR$(0);
"  "; CHR$(5);
: REM selection of space for
modification, and setting right
colume to 5
40   FOR I=1 TO 11 : LPRINT
CHR$(0); :
NEXT I
: REM definition of space
50   LPRINT CHR$(27); "p1"
: REM set proportional mode
60   LPRINT CHR$(12)
: REM new page
```

BBC BASIC CONTHOL OF PRINTER

```
10   VDU 1,27, 1,58, 1,0, 1,0, 1,0
: REM download character set
20   VDU 1,27, 1,37, 1,1, 1,0
: REM select downloaded character
set
30   VDU 1,27, 1,38, 1,0, 1,32,
1,32, 1,5
: REM selection of space for
modification, and setting right
column to 5
40   FOR I=1 TO 11 : VDU 1,0 :
NEXT I
: REM definition of space
50   VDU 1,27, 1,112, 1,49
: REM set proportional mode
60   VDU 1,12
: REM new page
```

We are always actively seeking programs for publication – either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation – usually not more than 1000 words – should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Balloon burster

on Dragon

The idea of this game is to burst five balloons with the point of your dart.

Full instructions are given in the program.

Program Notes

10-260	Setting up graphics
270-340	Test for keys and hit
350-390	Draw dart
400-490	Draw and move balloon
500	Balloon hit
510-560	Endings
570-600	Graphics
610-690	Instructions

```
10 POKE 65495,0
20 GOSUB 610
30 PMODE4,1:PCLS.Q=0
40 DIM A$(35),A(50),B(50),C(50),D(50),E(
50),F(50)
50 CIRCLE(10,10),10,1
60 CIRCLE(14,14),3,1
70 PAINT(10,10),1,1
80 DRAW'BM10,20F3D1G3D1F3'
90 GET(0,0)-(20,32),D,G
100 PCLS
110 DRAW'BM10,10NU10NE5NL10NG5ND10NF5NR1
0NH5'
120 GET(0,0)-(20,20),F,G
130 PCLS
140 FORX=1TO35:READ A$(X) NEXTX
150 GOTO 200
160 FORX=1TO35 FORY=1TO11 Z$=MID$(A$(Y),
Y,1):IF Z$="0" THEN Z=0 ELSE Z=1
170 IF Z=1 THEN PSET(Y,Y) ELSE PRESET(X,
Y)
180 NEXT:NEXT
190 RETURN
200 GOSUB 160:GET(0,0)-(35,11),A,G
210 FORY=1TO10:READ A$(Y):NEXTX
220 GOSUB 160
230 GET(0,0)-(35,11),B,G
240 SCREEN1,1
250 PCLS
260 Y=90
270 GOTO 400
280 IF PEEK(341)=223 THEN Y=Y-5
290 IF PEEK(342)=223 THEN Y=Y+5
300 IF Y>180 THEN Y=180
310 IF X<0 THEN Y=0
320 IF PPOINT(39,X+6)=5 OR PPOINT(39,X+5
)=5 THEN GOSUB 500
330 IF RND(5)=1 AND Q=0 THEN GOSUB 410
```

Baud Walk

American Peoplelink

Regular readers of these columns will have read of the American Databases. *The Source* and *Compuserve* which can be accessed surprisingly cheaply via Packet Switch Stream. Just before Christmas, I was privileged to witness the birth of a new, cheaper alternative to these services. *American Peoplelink.*

Peoplelink is interesting, in that it is priced cheaper than its current rivals to the American *Videotex* throne. Aimed more at the 'man in the street', it costs just $2.95 an hour to access (as compared with the 6-7 dollars an hour that *Compuserve* and *The Source* charge). Added to these charges, (for users in the UK), is the cost of PSS, or the more expensive option of direct mail, access, which works out at £8 and £37 respectively, (assuming 'cheap rate' calls).

Peoplelink is based around two Tandem mainframe computers located in Chicago. Running in parallel, they can support around 160 to 200 simultaneous users, which, although sounding very few in number, can actually service upward of 5,000 subscribers, provided, of course, they don't all log-on at the same time!

Users of *Prestel* may be interested to know that, in spite of the fact that there are currently 47,000 subscribers, only 700-800 are actually logged on at the same time. Once these ratios are applied to Networking, it's easy to see why databases such as *Peoplelink* can be started with as little as 50,000. In fact, because of provisions for expansion, *Peoplelink* cost the financiers around $100,000 to launch. Because of the relatively low start-up costs (to them, that is), they are offering 'founder member' subscriptions for just $15, and $2.95 an hour connect fees.

There are surcharges for 1200 baud and peak-time usage (Monday to Friday, 9am through to 6pm), but this still keeps the rates very competitive. I understand that, until April of this year, founder members may dial direct to Chicago, and 'connect fees' are waived. If you haven't got a PSS account, and can stomach a short dialled direct Transatlantic call, then for an admission fee of $15, it will allow you to sample the delights of American databasing, although, at $37 per hour direct-dial rates, PSS soon becomes a much cheaper alternative to an irate British Telecom Accounts Manager!

For more information on *American Peoplelink*, write to Jules Millman, American People-Link, Arlington Ridge Office Centre, 3215 N. Frontage Road, Suite 1505, Arlington Heights, IL 60004, USA. Telephone 0101 312 870 5200. Prestel and Telecom Gold Users may send mail to the UK collection points Prestel 01 999 5900 Telecom Gold 84 TCC014

Robin Wilkinson

Baud Walk is a new weekly column with news on networking, databases, reviews of modems and software and points of contact for information.
Any readers with experience of networking are asked to send their experiences or news of services to Robin Wilkinson Baud Walk *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 7LD. He can also be contacted on Prestel mailbox 019998727.


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```
340 RETURN
350 SCREEN1,1:PUT(0,X)-(35,X+11),A,PSET:FORWA=1TO50:NEXTWA:PUT(0,X)-(35,X+11),C,PSET
360 GOSUB 280
370 PUT(0,X)-(35,X+11),B,PSET:FORWA=1TO50:NEXTWA:PUT(0,X)-(35,X+11),C,PSET
380 GOSUB 280
390 RETURN
400 GOSUB 350
410 Q=1:A=235:B=RND(158):B1=-RND(10)
420 PUT(A,B)-(A+20,B+32),D,PSET
430 GOSUB 350
440 PUT(A,B)-(A+20,B+32),E,PSET
450 A=A-8
460 B=B+B1
470 IF B<0 OR B>158 THEN B1=-B1:GOTO460
480 IF A<0 THEN 550
490 GOTO 420
500 PUT(A,B)-(A+20,B+20),F,PSET:PLAY"T100O1CDEFGABO2CDEFGABO3CDEFGABO4CDEFGABO5CDEFGAB":PCLS:Q=0:BH=BH+1:IF BH=5 THEN 510 ELSE 250
510 CLS:PRINT"!!!!!!!!CONGRATULATIONS!!!!!!!!"
520 PRINT"YOU BURST ALL FIVE BALLOONS!"
530 PRINT:PRINT"WANT ANOTHER GO?"
540 INPUT A$:IF A$="Y" THEN GOTO 250
550 CLS:PRINT"YOU MISSED IT!!":PRINT:PRINT"HARD LUCK!":GOTO530
560 GOTO 560
570 DATA 0000010000,0011111100,1111111111,1111111111,1111111111,1111111111,0111111110,0011111100,0000110000,0000100000
580 DATA 0000100000,0000100000,0000100000,0000100000,0000100000,0000100000,0000111000,0000111000,0000111000,0000111000
590 DATA 0000111000,0000111000,0000111000,0000111000,0000111000,0001111100,0000111000,0000111000,0000111000,0000100000,0000100000,0000100000,0000100000,0000100000,0000100000,0000100000
600 DATA 0000100000,0000110000,0001111000,0011111100,0011111100,0001111000,0001111000,0000110000,0000110000,0000100000
610 PMODE 4,1:PCLS:SCREEN1,1:CIRCLE(128,96),80,1
620 PAINT(128,96),1,1
630 FORX=1TO1000:NEXTX:PLAY"O1T255L255CC"
640 PCLS:DRAW"BM128,96NU50ND50NL50NR50NE40NF40NH40NG40"
650 FORX=1TO1000:NEXTX:PCLS
660 CLS:PRINTSTRING$(32,"*");
670 PRINT"******BALLOON**BURSTER*******";
680 PRINTSTRING$(32,"*");
690 PRINT:PRINT"YOU CONTROL A DART WITH THE UP AND DOWN ARROW KEYS YOU MUST HIT FIVE BALLOONS WITH THE POINT OF YOUR DART,AND POP THEM.     IF YOU MISS ONE, THE GAME IS     OVER":RETURN
```

Book Ends

Book *The Complete MSX Programmers Guide* **Price** £14.95 **Micro** Any MSX **Supplier** Melbourne House, Castle Yard, Richmond, Surrey

I doubt that the five-hundred plus, plastic bound pages of this book will be the standard for computer books, but the standardisation of MSX computers probably made it commercially viable.

Whether any programmer's guide can be complete is questionable, but this one certainly tries to provide a comprehensive catalogue of the tools of the MSX Basic writer's trade. It starts with a succession of short chapters, each introducing several new keywords and most ending with an exercise or two.

Once the fundamentals have been established and practised you'll be ready to move on to the *Advanced Programming Guide*, 130 pages of Boolean Algebra, Advanced Graphic Techniques, Cartridge Slot Mechanism and more.

The second half of the book consists mainly of a reference section which makes an alphabetical journey through all the keywords with descriptions, syntax and hints. After which those with some previous knowledge of machine code will find a useful introduction to the Operating System.

All told this is an impressively – dare I say it? – *complete* guide to this range of micros. However, it's probably best suited to those with some programming knowledge already as the style is a trifle dry and technical which could, I suspect confuse the complete novice. Those who prefer the no-frills approach should find it invaluable though.

John Minson

Book *Electronic Music on the Commodore 64* **Price** £6.95 **Micro** Commodore 64 **Supplier** Sunshine Books, 12-13 Little Newport Street, London WC2H 7PP

Budding Thomas Dolbys would do well to take note of Mark Jenkins', (*Melody Maker*'s technical editor) guide to the C64 and music. He writes for both programmers with little musical knowledge and budding Mozarts who've outgrown their Steinways but don't know a *Peek* from a *Poke*. Both extremes of this broad spectrum would probably need some additional information, though the physics of sound is dealt with efficiently.

The book's four sections examine handling the *Sid* chip with listings, commercial music making software, hardware and finally the *Midi* standard of interfacing instruments and micro. This gives it a segmented appearance, but Mark Jenkins obviously knows his stuff.

While those with merely passing curiosity will probably only find the first quarter of real value, enthusiasts should find its usefulness increases in relation to their desire to experiment and tackle technicalities and to the size of their wallets!

John Minson

Arcade Avenue



Dark Star

Paul Ledger of Leeds writes a super letter full of *Pokes* including a new one for Moon Alert – "Type in 10 *Poke* 23693,0 cls *Load* "" *Screen$* *Load* "" *Code* 24576 *Poke* 42404,n *Print Usr* 26624 (where n is the number of lives – 255 gives lives). For Imagine's *Arcadia Poke* 25776,0, *Hunchback Poke* 36888,0, *Kosmic Kanga Poke* 38212,0; *Trans Am* – Break in after main block of code has loaded ant type '*Poke* 25446,0 *Continue*' (enter) "

Paul also sends these high scores — *Knight Lore* 48%, *Decathlon* Day 1 376 410 Day 2 294,615.

Now then all, Dragon owners sit up and pay attention First of all comes a letter from Paul Thompson of Bracknell who has these high scores – *Hungry Horace* 100,102, *Time Bandit* 18,850, *Manic Miner* 2,200

Paul goes on to enthuse about the game *Time Bandit*, available from Microdeal, which "has over 300 screens and is brilliant – recommended to all Dragon owners" This brings me along nicely to a letter from Mark A. Blease of Oron Software who begins with the very true statement that "there are more and more high quality games appearing for the Dragon. That is why we are setting up the *Dragon Games Users Group* Our aim is to cater for Dragon owners who will receive our two-monthly newsletter, *Dragon Software* which will include reviews of over 30 games as well as a page for members to exchange information and tips Members will receive 15-20% off all software which can mean great savings Write to Mark c/o Oron Software, 64 Prince Street, Rochdale, Lancs OL16 5LJ

Mr A R Wedge of Enfield has written in praise of the Dragon-Design game *Dark Star*, "the best blast'em to bits game on the Spectrum" The good news is that Amstrad owners will also soon be able to enjoy this arcade masterpiece which will be some compensation for the news that the expected conversion of *Halls of the Things* has hit a snag and will be delayed. However, existing fans of Halls, and I know that there are many, will be very excited to hear that soon, perhaps by the time you read this, *Return of The Things* for the Spectrum will be in the shops The game has a playing area of 32 times the size of Halls, includes the original tower where Halls was set within its landscape, has much nastier monsters (if that is possible)

Mr Wedge also gives these suggestions to type into the high score sheets for some unusual replies – Crystal, Tony Bridge, *Jet Set Willy*, MSX, Spectrum, sex, nothing (just press enter), spectacle, Matthew Smith, Ultimate, help and certain other four letter words He also sends out a plea to hackers to find the password for the mystery game on the *Dark Star* tape called *Spectacles*. This is echoed by Stuart Young of Glasgow Well, I am reliably informed that the clues necessary to find the password are held in the *Dark Star* program, but if nobody manages to find it fairly soon the password will be released

Tony Kendle

Games Wizard Competition

Play the games,send in your high scores on the form and you could become The Games Wizard.

	Commodore	BBC	Spectrum	Amstrad
Game 1	Suicide Express	Elite	Technician Ted	Sorcery
Game 2	Beach Head	Jet Pac	3D Star Strike	Splat
Game 3	Shoot the Rapids	Chuckie Egg	Cyclone	Manic Miner

Game Wizard Entry Form

Micro

Game 1 score:

Game 2 score

Game 3 score

Name

Address

Your signature

Witness's signature

Micro Education

Glowing eyes

A few weeks ago London's Barbican Centre was home to a computer exhibition which most people probably never even noticed Under 16's were not admitted, which was ironic because its topic was Hi-Technology and Computers in Education.

Of all the areas into which the micro has spread its chips, education is probably the least glamorous Though many home computers are bought with the good intention of 'educating', most end up used for zapping Considering the standard of some educational software this is hardly surprising

The exhibition proved something of an eye-opener, though, in terms of the high quality of most of the educational software now being produced.

Inevitable there were almost enough turtles to fill a zoo, Logo being the language that's synonymous with programming for the young Acorn has an implementation on two 16K Roms. Open Logo while at the other end of the spectrum, Honeyfold Software announced a disc or cassette version for the same micro for only £16 Handsomest turtle award goes to the Valiant with its see through case and glowing LED eyes

The Teach Robot mechanical arm, with movement in six axes, has obvious potential for class projects Older students can also investigate computer architecture via the patchboard system of logic gate floors by Lumrose

While all the exhibits mentioned so far are concerned with developing computer literacy and skills, the micro also has a place in teaching other subjects

Duckworth was demonstrating a somewhat bizzare tutor for the recorder. It comes complete with the 'electronic recorder' resembling a twelve-inch ruler with sensitive pads to mark the holes, touching them generates a note which can be displayed.

One eye-catching stand belonged to Polydron, a construction system using brightly coloured, flat plastic triangles and squares to develop an understanding of 3-D geometry in the young Those who buy *Espionage* an adventure game set in the oil business, may not realise that it is just part of a teaching system which also has a classroom package, and that the two interlink This development from Modular Resources is one I hope to return to in a future column

Finally, there are alternative ways of addressing your micro, ranging from the AMX mouse for the BBC, with its Macintosh style icons, to the Star Devices touch tablet and its overlays

John Minson

Micro Education is an occasional column dealing with all things micro in the education world.
We would like to hear from anyone with something to say about computers in schools and education. Send your letters or details of new products to John Minson, c/o *Popular Computer Weekly* 12-13 Little Newport Street, London WC2H 7PP

Tony Bridge's Adventure Corner



Never look back

The Village Underworld is another Quill'd adventure from a new software firm, the quaintly-named Orpheus Never Look Back. On first glance, this is just another adventure, with not much about it to warrant rushing out to buy it. But look a little closer.

You start, standing before a village hall, beside the open boot of your car, where you must return all your treasures for scoring – but before entering, try a bit of exploring. Around the village hall lies the village, and you can wander around, mapping as you go. So far, so ordinary. But now, you come across an extensive farm, and eventually stumble across the opening to an underground maze. Fortunately, the route through the maze is posted right at the start, in the form of a very simple code (the directions being those on the cursor keys), so it is quite simple to get through.

Starting again at the first location, go on, *Open Door* and then *Enter Door*. You will be confronted with the entrance hall. Going West leads to a stage, upon which you can see some sliding controls. Go to the back of the stage and you will find a Fur Coat. Return to the stage. Now, there must be something to do with those controls – and sure enough, after some manipulating, a hole in the stage opens. This leads to a freezing Meat Factory (ah, a Fur Coat!). Proceeding further, you will eventually come across a lift. Calling the lift and then pressing the correct button will whisk you to one of six floors. One of the floors contains the solution to a puzzle contained on the floor level, another floor holds a *Treasure*, and a couple more remain enigmas (for the moment).

This is my favourite type of game – a rather uninspiring start, full of the old cliches, gradually opening, like a lotus blossom, to reveal an inventive and imaginative test of skill. Advanced adventures will probably polish this one off in a couple of sittings, but there is still quite a lot of depth to the game, and someone looking for a bit of practice will welcome the reasonably-priced (£4.95) *Village Underworld* (written by Keith Parrock). Orpheus (Hallarch) Ltd. The Smithy, Unit 10, Church Farm Hatley St George, Nr Sandy, Beds.

We don't often get to see adventures for younger players, and it's even rarer to come across a good one. Actually I don't know if *Jack in Magicland*, from Turtle Software was designed as a kid's adventure, but it would certainly make a good one.

Again, it is Quill'd, and the display is what we have come to expect. Using the Quill utility, it is essential to use a bit of imagination in the layout and pace of the game, if a 'formula adventure' is to be avoided. There are many ways of doing this – I'm glad to say that Jack, while playing much like other Quill'd efforts, plays in a slightly different way.

But to set the scene . . . "You have been an idle, lazy boy and your mother was very reluctant to entrust you with so important a task." This task is to sell off the family cow – sounds familiar, doesn't it? Of course, it's *Jack and The Beanstalk* on the Spectrum.

The adventure is rather like a multiple choice test – or one of the Jackson/Livingstone 'paragraph' books. Each location boasts a screenful of text, some of which is descriptive, and some of which is atmospheric action. For example, (here, you are for one reason or another the size of a microbe):

'You see a huge lake, and as you look around a tremendous ball of water drips from a leaking tap in the far corner. It is no place for you, but as you turn to go the door behind slams shut. *You Are Trapped*. If I were you I would start swimming, because a spider the size of an octopus has just seen you! Will you *FIGHT* or *SWIM?*'

In this case, if you *SWIM*, you get sucked down the plug-hole, and if you *FIGHT*, the Spider is too big for you, and you have to swim anyway, although you end up in a different place. Although there are a lot of rather tense situations in Jack, there is no overt violence, and the player almost always has a way out of trouble. In fact, the most trouble that I got into while playing the game was getting very hungry. There is a nice juicy apple, but being extremely small at this point, the problem is to somehow cut into it.

All in all, I like *Jack in Magicland*. Though I said it was for younger players (because of the scenario and this-or-that approach to the problems), the adventure is a tough one, quite hard enough for the more experienced. The locations are varied and interesting, and these and the several monsters, giants and other fairy-tale characters you meet will keep you slogging away to the end. Turtle Software, 40 School Road, Finstock, Oxford OX7 3DJ.

Interceptor Micros have taken the Amstrad CPC 464 in hand, and produced a little number for it called *Jewels of Babylon*. You'll know that the machine has its own monitor, so software writers are encouraged to provide snappy graphics in their games – and JOB is no exception, having some of the nicest pictures that I've seen in an adventure. They are drawn with great style and owe a lot to the best comic art, each picture having a black frame with the occasional palm leaf draped over the frame.

I only had a few minutes at the adventure, so didn't, I assume, see more than a small number of the locations and puzzles (there weren't many of those), but several people have written to say that it is a good one. Peter Brown, for example, says that it is superb, though he can't progress much further than the beach area. You Spectrum owners will be glad to know that *Jewels of Babylon* is available for their micro – get stuck in!

Finally, let me tell you a couple of bits of news that mighty interest some of you. *Valkyrie 17*, the only adventure that is a total Red Herring, is now released for the Commodore 64 at £9.95.

Tower of Despair, from Games Workshop, has been causing a lot of Despair to the authors, Mike McKeown and Russell Clarke. They've been so inundated with phone calls begging for help, that they've got together and written a Help Sheet, which can be obtained if you send a SAE to Mail Order Dept., Games Workshop, 27/29 Sunbeam Rd, London NW10.

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This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed, or if you are stuck in an Adventure you cannot progress any further write to Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

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CBM 64 plus C2N recorder carrying case Hardly used as new 1984 gift worth £250 Sell for £200 Tel 01-460 4785 office hours

CBM 64 games for sale Over £550 worth Sell separately plus £90 for 1541 disk drive Write to Graeme McGrath 15 Westerton Avenue Broughty Ferry Dundee or phone 0382 730751

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CBM PET 8032 with RAM-based software and Commodore 2031 disc drive £425 ono Tel Swindon 850470

COMPUTER SWAP

COMPUTER SWAP

Computer Swap entries are limited to 30 words Either fill in the accompanying form and send to Computer Swap *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 7PP or telephone 01-437 4343

All software offered through computer swap must be in original condition and for private sale only

It cannot be swapped

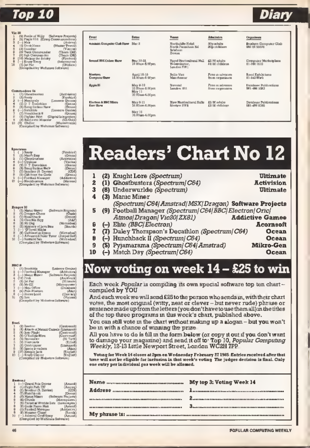
Warning It is illegal to advertise pirated software

Please write your copy in capital letters on the lines below

Name

Address

Telephone



Vic 20

1 (1) Perils of Willy (Software Projects)
2 (5) Flight 015 (Craig Communications)
3 (—) Max (Anirog)
4 (6) Duck Hunt (Master Tronic)
5 (3) Snooker (Visions)
6 (8) Tank Commander (Thorn EMI)
7 (8) Sub Commander (Thorn EMI)
8 (10) Mickey the Bricky (Firebird)
9 (—) Krazy Kong (Interceptor)
10 (7) Jet Pac (Ultimate)
(Compiled by Websters Software)

Commodore 64

1 (1) Ghostbusters (Activision)
2 (3) Booty (Firebird)
3 (—) Monopoly (Leisure Genius)
4 (2) D T Decathlon (Ocean)
5 (8) Kong Strikes Back (Ocean)
6 (—) Scrabble (Leisure Genius)
7 (7) Hunchback II (Ocean)
8 (5) Fighter Pilot (Digital Integration)
9 (8) Raid over Moscow (US Gold)
10 (9) Chiller (Mastertronic)
(Compiled by Websters Software)

Spectrum

1 ( ) Booty (Firebird)
2 (3) Match Day (Ocean)
3 (1) Ghostbusters (Activision)
4 (—) Cyclone (Vortex)
5 (9) D T Decathlon (Ocean)
6 (8) Kong Strikes Back (Ocean)
7 (7) Snooker (S. Davies) (CDS)
8 (6) Gift from the Gods (Ocean)
9 (—) Football Manager (Addictive)
10 (—) Blockbusters (Macsen)
(Compiled by Websters Software)

Dragon 32

1 (2) Manic Miner (Software Projects)
2 (4) Dragon Chess (Oasis)
3 (1) Hunchback (Ocean)
4 (3) Chuckie Egg (A&F)
5 (8) Mr Dig (Microdeal)
6 (6) Mystery of Java Star (Shards)
7 (—) O' level Maths
8 (9) Cuthbert in Space (Microdeal)
9 (—) Advanced Basic Tutor (Ampal Soft)
10 (—) Buzzard Bait (Microdeal)
(Compiled by Websters Software)

BBC B

1 (1) Scrabble (Leisure Genius)
2 (—) Football Manager (Addictive)
3 (—) Manic Miner (Software Projects)
4 (10) Frak (Aardvark)
5 (9) Jet Pac (Ultimate)
6 (8) Mr EE (Micropower)
7 (—) Mini Office (Database)
8 (4) Pole Position (Atari)
9 (—) Horse Lord (Century)
10 (5) Zen (Visions)
(Compiled by Websters Software)

Atari

1 (2) Zaxxon (Centresoft)
2 (1) Attack of Mutant Camels (Llamasoft)
3 (4) Solo Flight (Centresoft)
4 (6) O'Reilly's Mine (Centresoft)
5 (3) Encounter (Hi Tech)
6 (9) Diamonds (E/Soft)
7 (5) Gridrunner (Llamasoft)
8 (8) Space Invaders (Atari)
9 (10) Steeple Jack (English)
10 (—) Krazy Copter (English)
(Compiled by Websters Software)

Amstrad

1 (—) Grand Prix Driver (Amsoft)
2 (1) Flight Path 737 (Anirog)
3 (2) Snooker (S. Davies) (CDS)
4 (7) Hunchback (Ocean)
5 (6) Manic Miner (Software Projects)
6 (6) Ghouls (Micropower)
7 (5) Forest at Worlds End (Interceptor)
8 (9) Code Name Matt (Amsoft)
9 (3) Football Manager (Addictive)
10 (8) Monster Chase (Romik)
10 (—) Admiral Graf Spey (Amsoft)
(Compiled by Websters Software)

Event	Dates	Venue	Admission	Organisers
Brixham Computer Club Show	Mar 2	Northcliffe Hotel, North Furzeham Rd, Brixham, Devon	30p adults, 20p children	Brixham Computer Club 080 45 55334
Second BBC Online Show	Mar 30-31, 10.00am-6.00pm	Royal Horticultural Hall, Westminster, London SW1	£2.50 adults, £1.00 children	Computer Marketplace 01-930 1612
Northern Computer Show	April 16-18, 10.00am-6.00pm	Belle Vue, Manchester	Free in advance from organisers	Reed Exhibitions 01-643 8040
Apple 85	May 9-10, 10.00am-6.00pm; May 11, 10.00am-4.00pm	Novotel, London W6	Free in advance from organisers	Database Publications 061-456 8383
Electron & BBC Micro User Show	May 9-11, 10.00am-6.00pm; May 12, 10.00am-4.00pm	New Horticultural Halls, Westminster SW1	£3.00 adults, £2.00 children	Database Publications 061-456 8383

Readers' Chart No 12

1 (2) Knight Lore *(Spectrum)* **Ultimate**
2 (1) Ghostbusters *(Spectrum/C64)* **Activision**
3 (8) Underwurlde *(Spectrum)* **Ultimate**
4 (3) Manic Miner *(Spectrum/C64/Amstrad/MSX/Dragon)* **Software Projects**
5 (9) Football Manager *(Spectrum/C64/BBC/Electron/Oric/Atmos/Dragon/Vic20/ZX81)* **Addictive Games**
6 (—) Elite *(BBC/Electron)* **Acornsoft**
7 (7) Daley Thompson's Decathlon *(Spectrum/C64)* **Ocean**
8 (—) Hunchback II *(Spectrum/C64)* **Ocean**
9 (5) Pyjamarama *(Spectrum/C64/Amstrad)* **Mikro-Gen**
10 (—) Match Day *(Spectrum/C64)* **Ocean**

Now voting on week 14 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 14 closes at 2pm on Wednesday February 27 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .... **My top 3: Voting Week 14**
Address .... 1........................
.... 2........................
.... 3........................
My phrase is: ....

New Releases

REVISION

One of the very few items of software in the educational field to be universally acclaimed were the Penguin Shakespeare Study software programs Now the range has additional titles, *Julius Caesar* and *Romeo and Juliet*

Put simply what the packages do is provide a near instantaneous way of cross-referencing on the texts For example, choosing Roman as the starting point the computer would then point out significant themes in the text relating to Romeo and suggest cross themes which would develop ideas about and around the character

Whilst the programming is well error trapped and efficient, the really creative part comes in the way the references are chosen and interwoven. The whole idea is necessarily selective, but that only reflects the nature of 'O' levels which are themselves heavily categorised and fixed in their range

If you are studying 'O level English what you have in the Penguin range is a series of programs that ought be genuinely useful – unlike almost every other piece of software intended for education I've ever come across

Program *Romeo and Juliet*
Price *£7 95*
Micro *Spectrum*
Supplier *Penguin Harmondsworth Middlesex*

EXPENSIVE

You may well have seen, in the months prior to Christmas, a number of ads for the Tatung Einstein micro – a strange machine with around 80K memory and a built in 3" floppy disc drive Although it was reviewed quite favourably in *Popular*, quite honestly it has largely been forgotten since.

Well, the machine, which Tatung claims has sold around 20,000 which is not disastrous, has finally got some *games* software. However, the big problem with Tatung software is that like many machines the first offerings are hardly pushing the machine to its limits but they cost well over £10 a time being on disc (at least I assume that's the explanation).

I picked out *Chuckie Egg* since it is a highly regarded game, has been issued on many machines, and thus would be somewhat representative of what Tatung Einstein games would be like

For the two people who don't know, *Chuckie Egg* is a platform and ladders game where a little egg collector leaps about, up ladders and along platforms to collect eggs Get the lot and on you go to the next, more difficult, screen

So, to the Einstein version. It faithfully recreates the game in every detail and graphically I'd say it falls somewhere between the Spectrum and the Commodore, ie, the sprites don't flicker and change colour but they seem a little more finely drawn than the usual Commodore efforts The sound is very nice, the built-in speaker is pretty powerful and the volume and punchiness definitely add something

The end result is at least as good as the Spectrum version and represents not a bad start for the machine but then you discover it costs £12 95! This tends to transform one's opinion somewhat – I realise having everything disc based is most of the problem, but at a time when Tatung are still trying to get proper software backing for the machine, it won't do My suggestion would be to put two games of this quality on one disc and keep the price the same

Program *Chuckie Egg*
Price *£12 95*
Micro *Einstein*
Supplier *Tatung Stafford Park 10 Telford Shropshire*

CLOCKWORK

Rumours about *Alien 8* abounded since before Christmas when the first ads appeared, 'more mega than *Knight Lore*' was the hushed claim. It's here and it's certainly amazing but, perhaps not surprisingly but still a little disappointingly *Alien 8* is a redesigned *Knight Lore*

It's all here, the brill 3D graphics, the disappearing stairways, the crumbling blocks, things to pick up which might help you jump various obstacles and the two-tone colours

The setting is a space ship and you play a little robot that has to wander around replacing thermolex valves and activating armies of cryogenically suspended figures The ship must be fully activated before you reach landfall, indicated by a timer

Although solving the 3D puzzles to get through the rooms is possibly even more difficult than usual, so far I haven't found much by way of other life forms – only some clockwork mice that are animated so brilliantly they move just like ... well ... clockwork mice

So it's *Knight Lore* again with a few extras, better graphic design and it'll sell massively. I guess given the inventive genius of *Knight Lore*, they can do it again

Program *Alien 8*
Price *£9 95*
Micro *Spectrum*
Supplier *Ultimate*

This Week

Program	Type	Micro	Price	Supplier
Angelique	Ad	Amstrad	£6 50	Nemesis
Defend or Die	Arc	Amstrad	£7.95	Alligata
Battle for Midway	S	Amstrad	£8 95	PSS
Interdictor Pilot	S	Amstrad	£17 95	Supersoft
Stockmarket	S	Amstrad	£7.95	Amsoft
Music Composer	Ut	Amstrad	£5 95	Kuma
Soldier of Fortune	Arc	Atari	£7 95	English
Colossus Chess	S	Atari	£8 95	English
Arabian Nights	Arc	BBC	£6 95	Interceptor
Laser Attack	Arc	BBC	£6 00	Viking Software
Orpheus	Arc	BBC	£8 95	A+F
Whist	S	BBC	£9 45	Dotsoft
3Dtime Trek	Arc	C16	£6 95	Anirog
Flight Path 737	Arc	C16	£6 95	Anirog
Hypercircuit	Arc	C16	£6 95	Anirog
16ramble	Arc	C16	£6.95	Anirog
Star Commander	Arc	C16	£6.95	Anirog
Xargon Wars	Arc	C16	£6.90	Gremlin Graphic
Zodiac	Arc	C16	£6.95	Anirog
Berks	Arc	C16/Plus 4	£6.95	CRL
Castle of Jasoom	Ad	Commodore 64	£12.95	Commodore 64
Dungeons of Ba	Ad	Commodore 64	£12.95	Quicksilva
Gryphon	Arc	Commodore 64	£7.95	Quicksilva
Parky + Yellow Sub	Arc	Commodore 64	£8 00	Cheetah Soft
Pastfinder	Arc	Commodore 64	£9.95	Activision

New Releases

Pick of the week

SCREEN TWO

More from US Gold, although this particular piece of gold looks a bit tarnished to me *Congo Bongo* is a two screen game which is a mixture of *Donkey Kong*, *QBert* and on the second screen, a 3D version of *Frogger*

The program has a jungle/safari theme, with a little man who must be guided around dodging monkeys, coconuts, rivers etc Screen one has the little man jumping from plateau to plateau watching for falling coconuts and monkeys and trying to reach the top-most level.

If he makes it, the game screen changes to a river in which are swimming, various jungle animals on whose backs the little man must jump to reach the other side. Fish snap, likes shrink, rhinos rage, the graphics are all good and I was thoroughly bored by it.

Program *Congo Bongo*
Price *£8 95*
Micro *Commodore 64*
Supplier *US Gold, Unit 10, The Parkway, Industrial Centre, Birmingham*

GO WEST

Go is a Japanese game of strategy that is a national sport in the home country and has many devoted followers here Like many of the classic games, Go is essentially simple but can be played to an astonishing level of skill and complexity

Microgo 1 was first implemented on the BBC after winning a competition to find the best computer Go player A version is now available for the Commodore 64

Quite apart from the skill of the computer player and the quality of the graphics this program has a virtue which many other game implementations lack – it'll show you how to play the game properly A beginners mode allows you to play a game with running commentary on the current state of play and on screen annotations of the dangerous areas – the key element of Go is one of territory capture and the program will reveal vulnerable board positions

All in all if you like Go then you'll simply have to buy the program If you've never heard of it but enjoy computerised board games buy it anyway on the off chance

Program *Microgo 1*
Price *£9 95*
Micro *Commodore 64*
Supplies *Edge Computers, 3 Junction Road, Reading, Berks RG1 8EA.*

CUT AND THRUST

One of the most inventive and humurous arcade games ever must be *Spy vs Spy* for the Commodore 64 It is also one of the very few spin-offs that really captures some of the flavour of the original – in this case the famous Mad cartoons featuring two spys – one black, one white – whose viciousness, ruthlessness and total devotion to each other's destruction reveals them to be brothers under the skin (well, hat and coat actually)

The screen is divided into two sections, each giving an edge-on, 3D perspective view of the room currently occupied by each spy As the spy moves so the room changes In each room are hidden objects which each spy requires such as Briefcase Passport, etc, and these must be found and collected – finding them all enables an escape to be made

However, the really amazing part of the game is the way each spy can lay a number of traps for the other; bombs, trip wires, lethal buckets of water, etc These are positioned using the joystick The knack then becomes to watch what the other spy is doing so that you know where his traps are laid and can disarm them It is worth remembering where your own traps are placed lest you commit Hari-Kari. This turns the game into a kind of manic strategy game

Whilst you can play against the computer quite satisfactorily, the best comes with a human opponent as you both try to outwit one another – a laugh a minute

Program *Spy vs Spy*
Price *£9 95*
Micro *Commodore*
Supplies *Beyond, Farndon Road, Market Harborough, Leics LE16 9NR*

FLOWER SHOW

Macmillan, whose educational software released with Sinclair has been, in the past, one of the few bright spots in an incredibly dull educational software horizon, has released six new programs.

Previous Macmillan software has taken the bold step of providing material for the 12+ age range –it was very successful indeed With programs like *Glider*, educational material was provided for a more sophisticated age range

This Week

Here + There Mr Men	Ed	Commodore 64	£7.95	Mirrorsoft
Hi Bouncer	Ed	Commodore 64	£6.95	Mirrorsoft
Star Seeker	Ed	Commodore 64	£6.95	Mirrorsoft
Word Games Mr Men	Ed	Commodore 64	£7 95	Mirrorsoft
Murder on the Zind	S	Commodore 64	£11 95	Ariolasoft
Screaming Abdabs	Arc	Dragon	£6.90	A+F
Snowman	Arc	MSX	£7 95	Quicksilva
Deep Sea	Arc	Spectrum	£3 00	Falcon
Alpha Beth	Ed	Spectrum	£6.90	A+F
Castles and Clowns	Ed	Spectrum	£6 95	Macmillan
Julius Caesar	Ed	Spectrum	£7 95	Penguin
Quizlimer	Ed	Spectrum	£6.95	Macmillan
Romeo and Juliet	Ed	Spectrum	£7.95	Penguin
Snapple Hopper	Ed	Spectrum	£5 95	Macmillan
Space Scan	Ed	Spectrum	£5.95	Macmillan
Sunflower Number Show	Ed	Spectrum	£5.95	Macmillan
Tops and Tails	Ed	Spectrum	£5.95	Macmillan
Turntaking	Ed	Spectrum	£5 95	Learning Proces
Psychedelia	Ut	Spectrum	£5 00	Llamasoft
Spectrum Graph Machine	Ut	Spectrum	£73 95	McGraw Hill

Key **Ad** – adventure, **Arc** – arcade, **Ed** – education. **S** – strategy-simulation, **Ut** – Utility

that was actually useful

Most other companies had concentrated on earlier age ranges and had made a hash of this. The new Macmillan software is for the earlier age ranges and it's interesting to see how the company has tackled this area.

The *Sunflower Number Show* uses, like most other educational software, the dubious drill and routine method of firing question after question and noting right and wrong answers graphically. The questions are all on maths and the theme is one of making plants grow, ie, right answers add another leaf, wrong ones bring a nasty looking weevil or poison ivy that bit closer.

However, this program has a major virtue over others which are superficially similar – it is beautifully and expertly programmed. The idea that educational software requires as deft a programming touch as the latest mega-game is an important one.

The Sunflower Number Show uses smooth scrolling and sprites for its graphic effects, eg, when you successfully 'grow' a flower it blooms pleasingly and a little bird flies across the screen and lands on the words "well done" chirping enthusiastically. The animation of the bird is excellent, even the beak moves and it is this kind of detail that is going to make a child want to continue with the program.

The above, coupled with the fact that there are many different variations on the theme of plants growing, makes this program light years ahead of most other, apparently similar, offerings. What's true of this program appears to be true of all the other programs in the series and no fraudulent beefed-up price because it's 'serious' either.

Other educational software companies take note.

Program *The Sunflower Number Show*
Price *£5.95*
Micro *Spectrum*
Supplier *Macmillan, 4 Little Essex Street, London WC2R 3LF*

THINGIES

Activision, still flushed with the success of *Ghostbusters*, is shortly to issue a new Commodore title, *Pastfinder*, which, whilst unlikely to reach *Ghostbusters'* level of fame, is nevertheless an excellent program.

While it's a fairly straight arcade game, in that you need lots of quick reaction to dodge things, hit things, collect things, there are a number of features that lift it well beyond the run of the mill.

The viewpoint is one I have rarely seen before. You look down on the action but from slightly behind the scenes. The plot involves moving your well, spaceship it's not, so so let's call it a thingy and have done with it, through a strange landscape – a map option gives you some idea of where you are and where else you can go. There are objects to be collected, places to refuel your thingy and, if you're lucky extra thingies to be found.

I won't describe the whole plot, but it has a lot to do with ancient civilisations and radiation.

Pastfinder is well worth buying, but while any other company would be putting this out for £7.95 or even £6.95, the Activision price is £9.95. It is too much and detracts from a highly recommendable game.

Program *Pastfinder*
Price *£9.95*
Micro *Commodore 64*
Supplier *Activision, 15 Harley House, Marylebone Road, London NW1 5HE*

MINTER MAGIC

About *Psychedelia* a lot has been said already. As a program it has probably done more for the sales of early Pink Floyd records than LSD, OZ or Afghan coats ever did. Described by Jeff Minter as a Light Synthesizer (and that is as good a term as any) basically you get to create amazing flowing geometrical bursts of colour on your computer using the joystick.

The news that a version of the program was going to become available on the Spectrum was greeted by me with trepidation, yukky blotches of sickly colours where attributes clashed wildly, smears of ugly hues mingling like tomato ketchup and egg yoke in a sickly mess.

But no! It doesn't happen! Except for the reduced number of colours, the Spectrum version of *Psychedelia* is in no way inferior to the Commodore version and so can be recommended to space cadets everywhere.

Program *Psychedelia*
Price *£6.00*
Micro *Spectrum*
Supplier *Llamasoft, 49 Mount Pleasant, Tadley, Hants*

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7LD.

This Week

A + F Unit 8 Canal Side Indust Estat Woodbine St East, Rochdale Lancs LL16 5LB 0706 341111 **Activision** 15 Harley House Marylebone Road London NW1 01-486 7588 **Alligata** 1 Orange Street, Sheffield S1 4DW 0742 755796 **Amsoft**, Brentwood House 169 Kings Road, Brentwood Essex 0277 230222 **Anirog** Victoria Industrial Park Victoria Road Dartford Kent DA1 5AJ 0322 92513 **Ariolasoft** Retail **CRL** CRL House 9 Kings Yard Carpenter's Road London E15 2HD 01-533 2918 **Cheetah Soft** 24 Ray Street, London EC1R 3DJ 01-833 4909 **Datasoft**, PO Box 46 Hitchin Herts SG4 0XQ **English** Box 43 Manchester M60 3AD 061 835 1358 **Falcon** C/O Dept 1-6 Willering Walk Hornchurch Essex RM12 8NS **Gremlin Graphic** Alpha House 10 Carver Street, Sheffield S1 4FS 0742 753423 **Interceptor** Interceptor Micro's Lindon House The Green Tadley Hampshire 07356 71145 **Kuma**, Kuma Computers 12 Horseshoe Park Pangbourne RG8 7JW 07357 4335 **Learning Process** 38 Homedale House 3 Brunswick Road, Sutton SM1 4DG **Llamasoft** 49 Mount Pleasant Tadley, Hants 073 564478 **Macmillan**, Macmillan Information Systems, 4 Little Essex Street London WC2R 3LF 01-836 6633 **McGraw Hill** McGraw Hill Book Company Maidenhead Berks **Mirrorsoft**, Mirror Group Holborn Circus London EC1P 1DQ 01-353 0246 **Nemesis** 10 Carlow Road Ringstead Kettering Northants NN14 4DW **PSS**, 452 Stoney Stanton Road Coventry CV6 5DG 0203 667556 **Penguin** 536 King's Road London SW10 0BR 01-799 1984 **Quicksilva** Palmerston Park House 13 Palmerston Road Southampton Hampshire SO1 1LL 0703 20169 **Supersoft** Winchester House Canning Road Wealdstone Harrow Middlesex HA3 7SJ 01-861 1166 **Viking Software** 58 Central Avenue Syston Leicester LE7 8EE.



Immense power

What next, after the silicon chip? The laser computer? Two things limit the power of conventional computers – the maximum size of components (on chip transistors principally) that can be built and, secondly, how fast the chips can be made to work.

Silicon components still have a long way to go before reaching their limit of size and speed, but nothing can be done to alter their inherant slowness. This is a result of the finite speed of which electrons travel through a semiconductor. A typical switching speed or an on-chip transistor is somewhere around 50 millionth of a second.

Now, however, a team of scientists at Herriot Watt university in Edinburgh – with a radical new approach – have succeeded in decreasing this operation by a factor of 20,000. Not by discovering some laster semiconductor, but by a completely new idea that could revolutionise the computer.

Ever since the valve machines of the 1950's we have tended to consider computers as intrinsically electronic devices. Why should they be? Computers consist of a large number of simple decision making elements such as *And* and *Or* gates which, up until now, have been constructed from electronic switching transistors. The Herriot Watt team, however, have created an *optical* equivalent of the transistor using super-fast laser light rather than electricity.

This 'transphasor', as it is known consists of an ultra-thin crystal whose faces have been given a mirror finish. Laser light striking the first face of the crystal is initially prevented from passing through. However, when a second, far less powerful 'modulating' laser beam is also aimed at the face, the slightly greater power causes the crystal to change its properties and the laser light passes through virtually unhindered. It is then relatively simple to adjust the optical transistor principle to create such devices as *Or* gates directly, rather than from a group of transistors.

Micro-electronic components require extremely complicated manufacturing techniques to make them as small as they are. Optical devices, however, are little more complex to make than a common mirror and the size of each component is determined only by how accurately the laser beam can be focused.

Conventional electronic devices are dedicated to one task only (say an *And* gate). Not so optical ones, they can change their identity depending only on the relative powers of the two beams fed into them.

Finally, beams of electrons in a silicon chip travelling close to each other can interact, which means that the signals in electronic circuits must be fed along conducting, insulated wires. Laser light beams, on the other hand, do not interact however close they are.

Such a 'transphasor' offers, also, the near ideal properties for parallel processing. Not, that is, the 'gross' kind used by today's super-computers, where fairly large chunks of a problem are allocated to individual processors. Instead 'true' parallel processing could be possible, where a single signal can be operated on simultaneously by many gates and where each gate can communicate with a multitude of others. Something like the way the human brain works!

Transphasors with their super-fast speed and parallel processing possibilities, offer the promise – albeit some way in the future – ofcomputers with immense power.

However, the devices are still in their experimental phase of development. Not least amongst the problems is the design of a completely new computer logic and architecture. .

Glen Counsell

Every alternative

Puzzle No 146

The ornamental lake at Burlingham Hall is rectangular in shape.

"The length and breadth are each an exact number of yards," explained the 14th baronet to his weekend houseguests, "as are the diagonals across the lake."

As the party was kept indoors due to particularly wet weather, it was proposed that, given the above information and the fact that the width was 144 yards, each guest should try to determine the size of the lake.

Unfortunately, there is more than one possible answer from the data given, since each guest came forward with a different possibility.

How many guests were there at Burlingham Hall if, between them, they accounted for every possible alternative.

Solution to Puzzle No 141

Thirteen deals are needed with a standard pack. If four extra cards are added then 16 deals are required.

```
10 DIM CARD(52)
20 DIM DEAL(4,13)
30 K=1
40 FOR N=1 TO 52
50 CARD(N)=N
60 NEXT N
70 C=1
80 FOR N=13 TO 1 STEP-1
90 FOR M=1 TO 4
100 DEAL(M,N)=CARD(C)
110 C=C+1
120 NEXT M
130 NEXT N
140 FOR M=1 TO 4
150 FOR N=1 TO 13
160 CARD((M-1)*13+N)=DEAL(M,N)
170 NEXT N
180 NEXT M
190 FOR F=1 TO 52
200 IF CARD(F)<>F THEN 240
210 NEXT F
220 PRINT "PACK IS RESTORED AFTER ";K;" DEALS"
230 END
240 K=K+1
250 GOTO 70
```

The program sets up two arrays – one to record the order of the cards, and the other as they are dealt out. The cards are numbered from 1 to 52 and their relative positions can be checked as their order in the pack alters. Remember that the first card dealt in the first deal will be the 13th card dealt in the second.

Winner of Puzzle 141

The winner of Puzzle 141 is Dr P S Story of Rochester, Kent who receives £10

Rules

The closing date for Puzzle No 146 is March 8.

The Hackers

Quick Mr Binks! - it's Dan again!
Oh no!
BINKS SILICON FOUNDRIES
Planning on sending some high technology to the Russkies? eh 'comrade'?... Is THAT your little game? Eh? Eh?
?
SNATCH!
Well, we're gonna put all you pinko commie fag subversives in a field, & ...
Quick! his pills are in his left pocket I think.



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